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EXPERIMENTS WITH OXYGEN ON DISEASE

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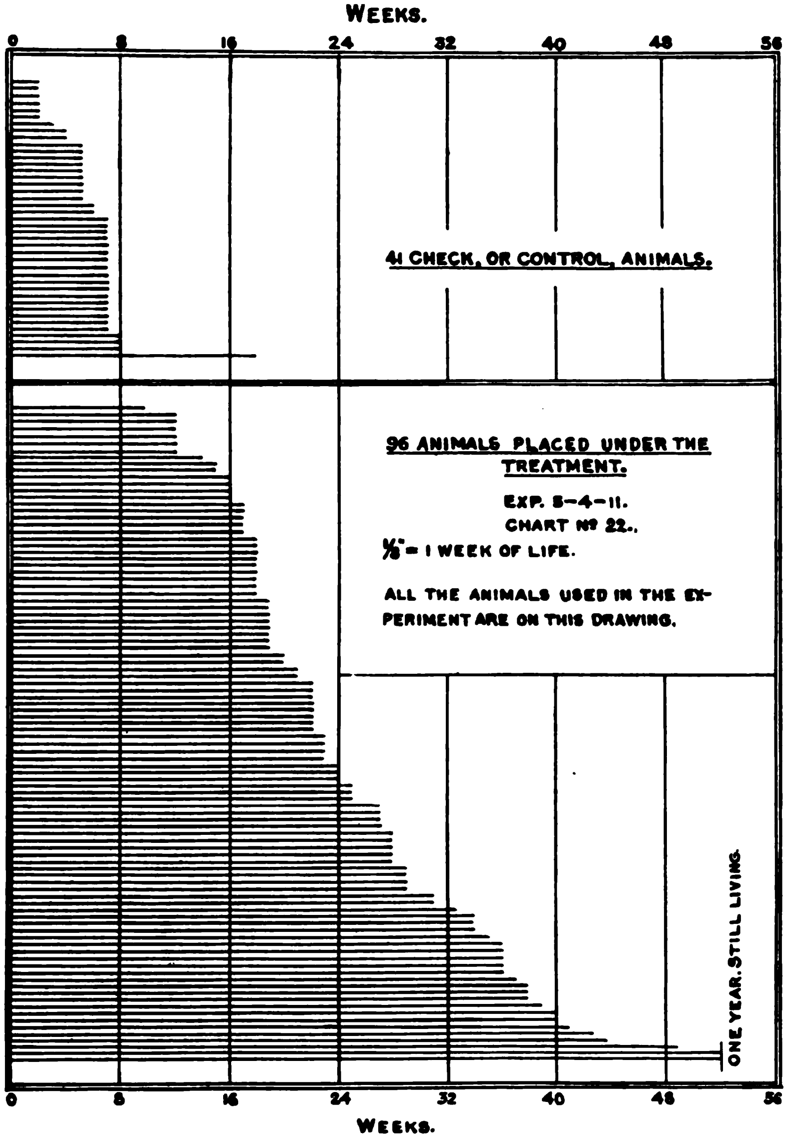

CHART GRAPHICALLY SHOWING THE LENGTH OF LIFE BY WEEKS OF 41 CHECK ANIMALS AS COMPARED TO 96 ANIMALS PLACED UNDER THE OXYGEN TREATMENT. ALL INOCULATED WITH THE TUBERCLE BACILLI.

EXPERIMENTS WITH OXYGEN ON DISEASE

BY

JAMES TODD, A.M.

SECOND EDITION

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TO THOSE WHO HAVE AIDED THE WORK,

TO THOSE FOR WHOM IT WAS DONE

PREFACE TO THE SECOND EDITION.

These experiments were commenced almost twenty years ago. The first written experiment of which we have the record was dated June 29, 1905. In April, 1909, I determined to give the work preference over all else. In the spring of 1916 I published the first edition of this book.

The book as then written consisted of a sound theory based upon phenomena with which we are all familiar; an exhaustive demonstration of the principles involved and their practical application by means of animals inoculated with the tubercle bacilli.

It also included some applications of oxidation to man.

The human cases were the weak feature of the book, in fact the object of the publication was to endeavor to enlist the services of the physician in further demonstrating the effect of intensified oxygen upon microbic diseases in man.

Having now accomplished this latter purpose I again publish my work in the hope that the clear demonstrations of the power of oxygen which it contains will lead to the proper development of the process.

I have never felt that it would be wise to divide my work, as to publish now only the work done on the human beings would almost certainly lead to the vital principles of the process being lost, as they occur in the animal section of the work.

To accomplish my purpose of keeping all together I am publishing this second edition as two books in one.

In order to attain this object I publish the new portions in the first part of the book, to give prominence to the real object of my work, which is the practical application to man, and publish the first edition, the original work, as an appendix.

Time and the phenomena which have passed before me in the last five years have not made any changes in my views of the dominance of oxygen in organic life so there has been nothing in the original book requiring change for such reasons.

I have, however, made the following changes in the original book for the reasons given.

The facts showing that virulence, rather than quantity, controlled in these germ questions, which I had simply added to the chapter on the guinea pig in the first edition, are now taken up as a separate chapter and placed after the first section of the animal experiments.

I have completely omitted the chapter "The Significance of the Autopsies" as I found that, in that chapter, I had violated my fixed decision not to attempt to explain oxidation within the living body, as I am not trained for this work and to follow such a course would eventually lead to disaster.

I am a chemist and an engineer, not a physician, and I deal with these questions purely from the viewpoint of my professions; knowing full well that the body, entirely composed of the chemical elements, must be governed by the laws of the elements and I leave to my reader the decision as to whether or not I am right.

I have also entirely removed the greater portion of the work done with human beings (the chapter "Nutritive Oxidation") for the reason that the records had been too loosely kept to be of value, excepting in the case of the Bright's disease cases, where the urine analyses make a sufficiently clear record.

This causes the disappearance from the record of fifteen animals from the nutritive section of the First May Experiment but does not in any way alter the result or change the reasoning.

I have rewritten the Review chapter to bring it up to date and have inserted it in this edition.

As the appeal upon which the first book was based did not seem to accomplish much, I have, to a certain extent, removed it from the first edition.

I have done my work and accomplished my purpose, under peculiarly adverse circumstances, to some of which I refer in order to enable my reader to fully appreciate the situation as it exists.

So the lights and the shadows of a long, hard struggle will pass across these pages but it shall be my care that the shadows do not appear unnecessarily.

The power of oxygen over our body processes and the ease with which it can be utilized, are so apparent that it often seems to me that my real work is to rescue it from the obscurity that comes of obviousness.

To make the matter a *vital* question rather than an *academic* one.

There is one and only one, of the many criticisms that I have met that I wish here to answer.

I am continually accused of writing unscientifically.

My work has been a problem from one end to the other, or rather a series of problems.

What could I have gained by writing to the physician of the forms of an element or to the chemist of pulse and respiration?

The truth is that my work is interwoven with so many different professions—mechanics, electricity, chemistry, medicine—that there is nothing left for me but the great middle ground of common intelligence and this path I took and it has seemed to me that a little thought on the part of the critics would have shown this to have been the only course open to me.

In justice to myself I ask if a more coldly scientific demonstration can be given than by my drawings?

It can be said with truth that I have spoken very plainly in regard to my experiences with the physician and an explanation of my course seems advisable.

I am not at enmity with the physician; I have many warm friends among them and certain of their characteristics compel my sincere admiration.

On the other hand my work has been seriously injured by the characteristics of certain types of the physician. His peculiar views as to ethics and professionalism have led him to oppose my work persistently and at times bitterly and when he takes this course he makes it necessary for me to fairly face the issue he raises and I have faced it and will continue to do so.

My real problem is not the physician; it is more the general inertness of men to new ideas.

The first edition of this book was written primarily for the purpose of inducing the physician to aid my work by showing its application to man and in making my appeal I felt that it was due that I should authenticate my work as far as possible.

To accomplish this purpose I formed a committee composed of men prominent in the scientific life of Pittsburgh. The work now being complete and open to investigation in all its branches does not, to my mind, longer require authentication in this way.

To those physicians who have so ably and unselfishly aided me in accomplishing my ambition I wish to express my sincere appreciation.

Perhaps the greatest practical aid I have received since the publication of the first edition has come from Mr. Wilson A. Luce. Mr. Luce, an engineer, was at that time General Manager of the collieries of the Lackawanna Steel Company at Ellsworth, Pa. After reading the book he expressed himself as considering it a demonstration of the principles involved and at once took the necessary steps to have it used at Ellsworth. This led to Doctor Ellis' cases and was of great assistance to me in other directions and I wish to here express my appreciation of Mr. Luce's very valuable assistance, given just when I most needed it.

To Doctor Frederic L. Bishop, Ph.D., Dean of the Engineering School of the University of Pittsburgh, I owe my thanks for the consistent way he has sustained my effort and for his unstinted and always valuable advice.

To my life-long friend Doctor George H. Clapp, Ph.B., Sc.D., Chairman of the Board of Trustees of the University of Pittsburgh, I feel that I owe more than words can well express; from the inception of the work he has stood beside me. In the darkest days—and there have been many of them—his helping hand has always been for me. No task that I have given him, and they have been many, but that he has fulfilled, not only promptly but also with that rare tact and sound judgment that are so uniquely his own.

It will materially aid the reader to a clear understanding of my work and the thoughts that control me if he will now turn to the Preface to the first edition (page 131) and read it and the short chapter on the theory with which I commence that edition, before taking up the human cases.

In conclusion, I rely not on myself but entirely on the element I represent.

JAMES TODD

PITTSBURGH,
April, 1921.

SECOND EDITION

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THE HUMAN SECTION

THE EFFECT OF OXIDATION ON MICROBIC DISEASES OF MAN

The object in this section of our work is to clearly place before the reader the effect of oxidation upon the microbic diseases to which the human being is susceptible.

While the later sections place before him all the vital details covered by the many years devoted to the experiments, yet it seems best to begin our book with a short statement of the basic principles involved in the experiments preceding the work done with the human beings in order that the reader may the better understand both our views and the results which will be placed before him.

The writer has been specially trained, both by education and inclination, for experimental research and has, for a period of fully thirty years, given much of his time to the study of the element oxygen.

When considered in the light of the orderly development of the human race, this field is, to the writer's mind, not only the most productive but also the most entrancing of all the fields of chemistry that are open to us. It is truly a consistent effort to enter the chemistry of life.

Many elements enter into the composition of our bodies and none may be ignored for upon the interwoven workings of their laws depends not only our health but also our power to defend ourselves from the attack of disease.

Among these many elements four stand strongly forth because they alone compose more than ninety-eight per cent. of the organs and tissues of our bodies.

These elements—oxygen, nitrogen, carbon and hydrogen—must form the principal basis of the exceedingly complex reactions involved within that which we call the living body.

When we come to a close study of these four predominating elements we are forced to the recognition of several very significant facts, facts that we may not ignore; they are before us and must be faced unless we choose to turn our backs on the truth.

May we shelter ourselves behind the time-worn statement that chemistry has nothing to do with life; that the so-called vital spark ignores all else? We think a better view is that the predominating elements are the predominating forces by which the living body is governed. That the clue to its control lies in the laws of the elements rather than in such complicated fields of research as the toxines and anti-toxines.

When we place these four predominating elements before us for study in connection with the phenomena of organic life, believing that the secret lies within the laws which these elements are known to follow when disassociated from life, we are at once brought face to face with one of the simplest and best understood of all the inorganic laws—oxidation and reduction.

Carbon and hydrogen are the two principal reducing agents. Oxygen is the one oxidizing agent. Nitrogen is to the writer an element of mystery, in some ways the most inert, in others the most active of all the major elements and in our work we have not been able to decisively prove its action.

With carbon, hydrogen and oxygen it is different, because the two reducing agents are opposed in their forces by oxygen and when this opposition of forces is closely studied it seems to give us solid ground for reasoning; ground which in many years of work has never failed us and which has now been brought to a logical conclusion by long and definite experiment.

Our original view was that the main control of the chemical forces of the body was by the action of oxygen upon carbon and hydrogen; it would be repetition to place the details here as the reader will find them in connection with the animal experiments. All that is required here is the terse statement that it was our belief, based upon the above reasoning, that when the body was too rich in the reducing agents it lost its power of resistance to germ attack while, conversely, when oxygen predominated, the body had full resistance, its chemical standard being high.

Now, if at will, one may introduce oxygen in a vital, as well as in a controlled, way into the living body he will of necessity revitalize that body and enable it to utilize its full forces in resisting or overcoming the microbic forces, if these latter forces are sustained by reduction, *i.e.*, carbon and hydrogen.

If you decide that our work proves this to be the case then you are forced a step further and recognize oxygen as the dominant element in life and you commence to study chemistry as Nature designed it and not as man wrote it.

To the writer's mind each of the elements represents an individualized power, strong in some directions, weak in others but always a power and in the opposition of these powers or forces we have a very far reaching law which he calls the opposition of forces.

The power of one element opposing the power of another, as chlorine opposes the power of sodium in common salt, produces a result which could hardly be predicted from the study of either element alone. Two terrific powers, exceedingly dangerous to come in contact with when disassociated, produce, when opposed, just common table salt.

Having reached this point in our reasoning the question naturally arises as to how to introduce oxygen into the diseased body so as to best accomplish the practical cure.

Oxygen enters the body in two ways, through the food and through the lungs, but the body will only take its allotted amount. Nature holds a condition which we call normality and this must be overcome before we can be successful.

We turn to the study of our element and we find another important fact, namely that the element can be so treated as to make it temporarily assume an activity that it does not ordinarily possess.

To this intensified form of the element is given the name Ozone. By the proper use of so-called ozonized air we have accomplished our purpose. We applied it to our animals by allowing them to breathe it in great dilution for long periods. To the human beings we gave edible oils oxidized with the intensified forms of the element.

There is a tremendous problem involved in this question of the different forms an element may assume; our views in regard to it will be found in the animal sections of this book.

The sole question placed before the reader in this section is as to whether we have accomplished our purpose of curing disastrous microbic diseases in human beings by means of intensified oxygen, after this question is answered is time enough to deal with the why and the how.

Unusual views on subjects of vital importance require clear proof. The burden of proof is upon us. Recognizing our responsibility we have shirked no part of it.

We have not followed the practice that is so prevalent, of giving only those experiments that seem to sustain our views, instead we have with absolute justice placed before you each and every fact. The complete record of every animal and of every human being is placed in this book and if you can show us reasonable grounds for the further investigation of our work we will give you free access to all our records, including the name and address of each patient.

On our part we simply ask justice and that, not for ourselves, but for the work and the inestimable good that can come of it.

To those who are untrained in the study of the elements and especially to those who have made no attempt to attain some conception of the elements as, and for, the purposes which Nature designed them to fulfill, these experiments will probably seem incomprehensible, to such we cannot hope to appeal, but to those who really feel the power and the wonder of Nature and who must, perforce, recognize our very great lack of knowledge, it will not seem strange to see a Nature-made element able to control our bodies in disease, and to these latter we can and do appeal.

To those who believe that each disease must have its separate treatment and that serums only can be used successfully in combating diseases of microbic origin the power of oxygen will come as a mental shock, to these we would say to study our evidence and try to look at the case purely upon its merits—bias will neither destroy oxygen nor bring us to a conclusion.

While full information as to the remedies used, their characteristics and the methods of making them are given in a later chapter it seems best to state here that the intensified oxygen was supplied to these patients through the medium of oxidized oils.

The oil used in all the cases, excepting those of nephritis, was cod liver oil chemically combined with about eight and one-half per cent. of intensified oxygen.

In the nephritis cases, which were the first cases we had, we used oxidized olive oil.

We have had to establish a name for the oxidized compounds and have adopted the name "Ozonate" for the purpose.

We have of course found it necessary to formulate some rules to govern our work; the principal one we use is as follows:

If the patient refuses to use the remedy as directed by the physician, or to report for examination as required, or if the physician fails to give us signed records of the examinations, or the diagnosis, we at once reject the case without regard to whether it is good, bad or indifferent.

All cases in accord with this rule are published.

TUBERCULOSIS

THE CASE OF MISS E——— M———

This was our first case of tuberculosis. It came to us through Doctor W. L. Botkin, who also diagnosed the L——— R——— case.

Doctor Botkin enlisted during the war and his cases were continued by Doctor E. M. Ellis.

In placing this and the following cases before you we will not dwell upon them at any great length as we wish them to be studied through the words of the physicians whose extended written reports cover the facts very fully.

In order to condense our work still further we, while giving the diagnosis in full, generally only use a digest of the main features of the physician's later reports.

At times, in order to emphasize important statements, we sign the physician's name to the report. We have in our possession the physician's signed reports from which these digests are made.

In studying the diagnosis of this case notice that there is loss of weight, high respiration (normal respiration is 18), the characteristic temperature of early but pronounced tuberculosis (98.2°F. is normal temperature) and that she has night sweats, chills and expectoration.

The sputum was not tested for the tubercle bacilli.

COMMITTEE

DIAGNOSIS BLANK

November 25, 1917.

Name: E——— M———. *Address:* Ellsworth, Penna.
Nationality: American. *Occupation:* School girl. *Social Condition:*———.
Age: 13 years. *Height:* 4 ft. 5½ in. *Weight:* 71 pounds.
Temperature:———. *Pulse:* 70. *Respiration:* 28. *Blood Pressure:* 80.
Patient's Characteristic Temperature: 99½° in afternoons.
Family History: Negative.
Alcoholism:———. *Drug Addiction:*———. *Tobacco:*———.
Full History of Present Trouble: Present illness began in May with cough, expectoration, loss of weight, cold, night sweats, chills, slight pains in chest and shoulders. Feeling of drowsiness in afternoon. Patient's face becomes flushed—temperature of 99½° in afternoons.

How Long Since Present Illness Began: Six and one-half months.
Coughs: Yes. *Night Sweats:* Yes.
Chills: Yes. *Expectoration:* Yes.
Organs Involved: Left apex of lungs.
Is the Tubercle Bacilli Present in the Sputum: Sputum not examined.
Digestion Disturbance: All right at present.
Urine Specific Gravity: 1.002. *Albumin:* None. *Sugar:* None.
Previous Treatment: Open air, forced feeding, cod liver oil with hypophosphites.
Diagnosis: Pulmonary Tuberculosis.

(Signed) W. L. BOTKIN, M.D.,
Ellsworth, Penna.

REPORTS

Dates.	Weight.	Respiration.	Pulse.	Temperature	Appetite.	Dose: Drops In 24 Hours.	Treatment Started: Nov. 27, 1917. Treatment Stopped: July 22, 1918.
Digest of the Diagnosis.							
11-25-17	71	28	70	99.5	Good	30	Patient has cough, night sweats, chills and she expectorates. Appearance is drowsy. Digestion is good.
Data from Physician's Written Reports During Treatment.							Digest of the Physician's Written Reports During Treatment.
12-29-17	72¾	28	78	98.3	Good	60	Condition is improved; night sweats have disappeared. Digestion is very good.
1-31-18	71¾	20	90	98.2	Good	150	Condition good; no night sweats. Wants to go to school. Her appearance is brighter.
2-22-18	72½	24	88	98.3	Good	150	General condition fair. Digestion is good.
3- 5-18	73¾	20	72	98.2	Good	150	General condition good.
3-21-18	74	18	76	98.2	Good	180	General condition good.
4- 8-18	75½	24	84	98.3	Good	180	General condition good.
4-23-18	75½	22	72	98.3	Good	180	General condition good.
5- 8-18	75½	20	76	98.2	Good	180	General condition good.
5-23-18	74½	24	74	98.2	Good	180	General condition good.
6- 9-18	75	24	76	98.2	Good	240	General condition good.
6-24-18	75	22	74	98.2	Good	240	General condition good.
7- 9-18	—	—	—	—	—	—	She has been so well that her parents have decided to stop the treatment and she is so well that I agree with them. (Signed) E. M. ELLIS, M.D.
7-22-18	75	20	72	98.3	Good	—	Patient seems perfectly well; no signs of the disease. Treatment discontinued. (Signed) E. M. ELLIS, M.D.
1- 3-19	86	18	72	98.2	—	—	No signs of disease. (Signed) E. M. ELLIS, M.D. (Report 5 months after treatment was discontinued.)

Final report on this case, which was made more than three years after we commenced the treatment and more than two years since the treatment ceased, is covered by the following letter:

"December 7, 1920.

"*My Dear Mr. Todd:*

"Examination of E——— M———— shows lungs negative. Pulse, respiration and temperature normal. Increased greatly in weight owing to age of a growing, going girl. Attends school regularly, a well girl.

"Yours very sincerely,
"(Signed) E. M. ELLIS, M.D."

Treatment was commenced on November 25, 1917, and discontinued on July 22, 1918, a period of about eight months.

Five months after the treatment ceased she was again examined and found to be perfectly normal and to have gained heavily in weight.

Under date of December 7, 1920, practically two years later, she was again examined and reported as perfectly normal and well. Had there been any dregs of the disease left it should have asserted itself in this period of two and a half years after all treatment had ceased.

A fair judgment of the facts before us seems to be that we have here a definite case of tuberculosis cured by the oxygen treatment. From the tabulated reports it will be seen that—

The weight has steadily increased.

The respiration has gradually passed to normal.

The temperature is normal in a month.

The distressing symptoms of the chills and night sweats quickly disappear and it seems to the writer that a young life is saved, but the judgment is yours, we know; we are writing to try to convince *you.*

Having given our reader the first case of tuberculosis treated by the oxygen process, we shall proceed by taking our poorest case and gradually working forwards to the climax.

The Case of Miss G——— K———

This case is apparently chronic, which fact seems to make a great difference in the result as all of our chronic cases seem much more difficult than those taken in the early stages. The case shows a history of loss of weight, a slight rise in pulse and respiration, the characteristic temperature of tuberculosis and the tubercle bacilli found in the mouth which last fact definitely disposes of any question as to the correctness of the diagnosis.

COMMITTEE

Diagnosis Blank

September 8, 1917.

Name: Miss G——— K———. *Address:* Phillipsdale, R. I.
Nationality: American. *Occupation:* Office work. *Social Condition:* Working class.
Age: 23 years. *Height:* 5 ft. 1 in. *Weight:* 101½ pounds.
Temperature:———. *Pulse:* 80. *Respiration:* 22. *Blood Pressure:* 110.
Patient's Characteristic Temperature: 99° + in evenings.
Family History: Negative.
Alcoholism: No. *Drug Addiction:* No. *Tobacco:* No.
Full History of Present Trouble: In April, 1916, had pneumonia, from which time a succession of colds, as patient expresses it. Sputum examined a few months later and found positive. A loss of weight of three pounds during the last three months. Appetite good. Slight evening temperature of 99° +.
How Long Since Present Illness Began: Probably eighteen months.
Coughs: Very little. *Night Sweats:* No.
Chills: No. *Expectoration:* Considerable mornings.
Organs Involved: Both lungs.
Is the Tubercle Bacilli Present in the Sputum: Yes.
Digestion Disturbance: None.
Urine Specific Gravity: 1.016. *Albumin:* No. *Sugar:* No.

Previous Treatment: Rest and living in open air. Some medical treatment from her previous physician.

Diagnosis: Pulmonary Tuberculosis.

(Signed) H. M. SANGER, M.D.,
90 Waterman Street,
Providence, R. I.

REMARKS

The sputum was examined by the State Pathologist when patient was under the care of another physician.

REPORTS

Dates.	Weight.	Respiration.	Pulse.	Temperature.	Appetite.	Dose: Drops In 24 Hours.	Treatment Started: Sept. 8, 1917.
Digest of the Diagnosis.							
9- 8-17	101½	22	80	99+ in evenings	Good	30	No night sweats; very little cough; considerable expectoration mornings; slight evening temperature 99+.
Data from Physician's Written Reports During Treatment.							Digest of the Physician's Written Reports During Treatment.
10- 6-17	102	22	80	98.6	Good	45	Coughs very little; expectoration very little. Cannot endure much but when quiet feels good.
10-22-17	—	24	76	99.2	Good	60	Feels better. Digestion good.
11-19-17	104	24	74	99.0	Good	75	Feels very well; gaining slowly.
12-21-17	105½	24	76	98.6	Good	90	Her general condition is very good, less cough and feels stronger, although the right lung does not seem to clear up any. There is considerable hoarseness. She speaks of feeling much stronger since using the capsules. Rhode Island State Board of Health reports tubercle bacilli present in sputum Dec. 8th.
1- 4-18	106¾	26	76	99.0	Good	120	Physical signs same as before although she speaks of feeling stronger.
2-15-18	107	26	74	98.6	Good	180	Making gradual gain.
3-11-18	105½	26	74	99.0	Good	240	General condition good.
3-18-18	106	28	74	99.2	Good	240	Condition same as previously reported.
5- 7-18	104¾	24	74	99.4	Good	300	Very little change; always a little evening temperature.
6-18-18	102¾	26	74	99.2	Good	300	Apparent loss of weight due to clothing. Has afternoon temperature but practically no cough and has a better color.
7-26-18	104	24	76	99.0	Good	360	Unchanged since last report.
9-12-18	104	24	78	99.2	Good	450	Very little cough but some hoarseness; little expectoration. Has evening temperature. Feels well if keeping quiet.
10-23-18	103¾	28	84	100.0	Not good at present	540	Has acute bronchitis.
1-14-19	107¼	28	80	99.3	Fair	540	Condition is quite satisfactory although her chest has not cleared up and still has afternoon temperature although she is making some progress. This has been a very acute case and undoubtedly will be very slow.
3-13-19	104½	26	78	99.0	Good	630	Condition fairly good. This has been quite an acute case and temperature refuses to be normal in afternoon although the physical condition of her

Dates.	Weight.	Respiration.	Pulse.	Temperature.	Appetite.	Dose: Drops in 24 Hours.	
							chest is much better than when I first saw her. She is less anaemic. There is very little cough and she says she feels well in spite of the temperature. I believe this girl, without any help, would have steadily grown worse from the beginning. (Signed) H. M. SANGER, M.D.
4-25-19	104¾	24	76	98.0 4 P.M.	Good	630	April 11th had temperature 99.4°. General condition good.
6-16-19	103	24	74	98.8	Good	630	Chest is gradually clearing up. She has had a number of days of normal afternoon temperature although up occasionally for a few hours. Although the improvement is slow I am sure we are making some headway.
9-30-19	103	24	74	99.0	Good	630	Patient states that the temperature has been normal 98.2 – 4, practically all summer. Chest shows considerable improvement, although there is no gain in weight; that can be accounted for from the fact that she is much more active than formerly. The State Board of Health sputum examination is negative. Whereas this case is far from well, the gain warrants continuance of treatment. (Signed) H. M. SANGER, M.D.
12-22-19	104	26	78	99.8	Good	630	Slight gain. General condition satisfactory.

"May 22, 1920.

"MR. JAMES TODD,
"Pittsburgh, Penna.

"*My dear Mr. Todd:*

"Miss G——— K——— is getting on fairly well, slight temperature and cough occasionally, although a gradual but slow gain can be reported.

"(Signed) H. M. SANGER, M.D."

The treatment of this case extended over a period of more than two years. Perhaps the best comment that can be made upon the facts brought out by the record is that the patient is still living and certainly is as well as when we commenced the treatment, in fact, better. The tubercle bacilli have disappeared from the mouth and Doctor Sanger reports a steady, if slow, improvement.

THE CASE OF MISS M——— W———

COMMITTEE

DIAGNOSIS BLANK

August 3, 1917.

Name: M——— W———. *Address:* Saylesville, R. I.
Nationality: American. *Occupation:* None. *Social Condition:* Middle class.
Age: 39 years. *Height:* 5 ft. 4 in. *Weight:* 122 pounds.
Temperature:———. *Pulse:* 76. *Respiration:* 20. *Blood Pressure:* 126.
Patient's Characteristic Temperature: 98.2 to 99.8.
Family History: No tubercular family history.
Alcoholism: No. *Drug Addiction:* No. *Tobacco:* No.

Full History of Present Illness: Two years ago noticed that she became tired very easily and quite exhausted from any unusual exertion. Rales are noticed only on deep breathing and coughing. Has no occupation and is now taking only moderate exercise. Good appetite and digestion. Bowels normal.

How Long Since Present Illness Began: Two years.
Coughs: Very little cough. *Night Sweats:* No.
Chills: No. *Expectoration:* No.
Organs Involved: Right lung.
Is the Tubercle Bacilli Present in the Sputum: Not present in three examinations.
Digestion Disturbance: No.
Urine Specific Gravity: 1.018. *Albumin:* No. *Sugar:* No.
Previous Treatment: No special drug treatment.
Diagnosis: Pulmonary Tuberculosis.

(Signed) H. M. SANGER, M.D.,
90 Waterman Street,
Providence, R. I.

REPORTS

Dates.	Weight.	Respiration.	Pulse.	Temperature.	Appetite.	Dose: Drops In 24 Hours.	Treatment Started: Aug. 7, 1917. Treatment Stopped: Dec. 30, 1919.
							Digest of the Diagnosis.
8- 3-17	122	20	76	99.8	Very good	30	No night sweats, no expectoration, very little cough. Digestion very good.
Data from Physician's Written Reports During Treatment.							Digest of the Physician's Written Reports During Treatment.
9-11-17	122	22	74	98.4	Good	60	General condition good. Digestion very good.
10- 6-17	123	22	74	98.2	Good	75	General condition good. Practically unchanged from last report.
10-23-17	123	22	77	98.2	Good	90	A slight cold has increased the cough.
11-19-17	122¾	24	74	98.2	Good	105	Occasional temperature up to 99.4 since last report. Digestion is good.
12-18-17	121	26	76	99.0	Good	120	Has been having a severe cold during the last ten days with temperature of 99° to 101° every day.
1-16-18	121	30	76	99.0	Good	150	A catarrhal cold with some bronchitis is causing the temperature.
2-19-18	119¾	26	74	98.4	Good	180	With the exception of feeling tired and exhausted easily, condition is very good; no cough and only occasional temperature.
3-12-18	119¾	28	76	99.0	Good	240	Coryza followed by bronchitis.
5- 9-18	119½	22	76	98.4	Good	300	Has had a severe cold with cough and evening temperature of 99° to 100°. Temperature returned to normal May 1st. Does not feel quite so strong but keeps up fairly well.
6-12-18	118½	22	74	98.2	Good	300	A slight improvement of the chest.
7-26-18	115½	24	76	98.4	Good	360	Physical signs about the same. General condition fairly good. Occasional rise in temperature.
9-12-18	115¼	24	74	98.6	Good	450	Weight does not increase but patient feels well; has no cough or expectoration. At times temperature of 99° to 100° when tired.
10-22-18	118½	24	74	98.4	Good	450	General condition very good. She is stronger the past few weeks; no cough or expectoration and no rise of temperature from ordinary exertion.
1-20-19	113¾	24	72	98.4	Good	450	General condition good; has made considerable gain since I saw her in November.
3- 7-19	114¼	22	74	98.4	Good	540	Condition very good; chest practically normal and is having no rise in temperature. She is much stronger and able to do ordinary work about the house. No cough or expectoration.

Dates.	Weight.	Respiration.	Pulse.	Temperature.	Appetite.	Dose: Drops in 24 hours.	
4-23-19	114	22	76	98.4	—	540	General condition good.
6-13-19	111¾	24	74	98.4	Good	540	Practically a normal chest. The tuberculosis is practically arrested and I think we can safely discontinue treatment in a short time.
9-22-19	114	22	76	98.4	Good	540	No evidence of acute disease. We can safely say, disease arrested, in this case. Have advised continuing treatment for a time for its constitutional effect.

"December 30, 1919.

"MR. JAMES TODD,
"Pittsburgh, Pa.

"*Dear Sir:*

"Miss M——— W——— has had an opportunity to go to California for the winter and is now there. She seems well, no temperature or cough. Have discontinued treatment.

"Yours truly,
"(Signed) H. M. SANGER, M.D."

Doctor Sanger's very clear reports seem to require little explanation from us. The treatment covered a period of about two years. The case was stubborn but steadily progressive.

It will be noticed that he uses the word "arrested" rather than "cured," although in his last letter he speaks of her as well.

THE CASE OF MISS M——— M———

COMMITTEE

DIAGNOSIS BLANK

September 17, 1917.

Name: Miss M——— M———. *Address:* Pawtucket, R. I.

Nationality: Scotch. *Occupation:* Housekeeper. *Social Condition:* Middle class.

Age: 45 years. *Height:* 5 ft. 5½ in. *Weight:* 107½ pounds.

Temperature: 99. *Pulse:* 76. *Respiration:* 24. *Blood Pressure:* 116.
Patient's Characteristic Temperature:————.
Family History: No previous tubercular history. Father died at 74 from apoplexy, mother at 72 from pneumonia.
Alcoholism: No. *Drug Addiction:* No. *Tobacco:* No.
Full History of Present Trouble: First signs of tuberculosis noticed fourteen years ago. Has been treated in sanatorium and discharged—disease arrested eight years ago—disease active, to my knowledge, for four years since. Slight loss of weight for past year. Tires easily. Appetite and digestion good. Slight haemoptysis at long intervals.
How Long Since Present Illness Began: Fourteen years.
Coughs: Principally mornings. *Night Sweats:* No.
Chills: No. *Expectoration:* Mornings.
Organs Involved: Lungs.
Is the Tubercle Bacilli Present in the Sputum: Yes.
Digestion Disturbance: Very little.
Urine Specific Gravity: 1.014. *Albumin:* No. *Sugar:* No.
Previous Treatment: Sanatorium treatment—rest—out door life—vaccines, etc.
Diagnosis: Pulmonary Tuberculosis.

(Signed) H. M. SANGER, M.D.,
90 Waterman Street,
Providence, R. I.

REMARKS

This is one of the old chronic cases reported to you some time ago, and in a letter you stated we could try it. The other case, W——— B———, has undoubtedly improved even in the few weeks he has used the treatment.

REPORTS

Dates.	Weight.	Respiration.	Pulse.	Temperature.	Appetite.	Dose: Drops In 24 Hours.	Treatment Started: Sept. 17, 1917.
Digest of the Diagnosis.							
9-17-17	107½	24	76	99.0	Good	30	Coughs principally mornings; morning expectoration. No night sweats. Tires easily. Slight haemoptysis at long intervals. Digestion good. Tubercle bacilli present in sputum.
Data from Physician's Written Reports During Treatment.							Digest of the Physician's Written Reports During Treatment.
10- 8-17	107¾	24	74	98.4	Good	45	General condition unchanged.
10-22-17	107	22	74	98.2	Good	60	Feels stronger.
11-19-17	107¾	22	72	98.2	Good	75	Though scales show no gain, she is undoubtedly improving. Has some cough but feels well. Digestion good.
12-20-17	107¾	24	74	99.0	Good	90	Early in December an acute bronchitis, considerable cough and expectoration and temperature. Is now recovering. Although this is a very chronic case, previous to this acute attack was feeling much stronger, and is now getting back to her normal condition.
1-14-18	107¾	24	76	98.0	Good	120	Undoubtedly improved. A chronic case.
2-18-18	108	24	76	98.4	Good	180	General condition good. Digestion good.
3-11-18	107¼	22	76	98.2	Good	240	General condition very good; much stronger and has temperature only when she becomes very tired.
5- 7-18	106	24	74	98.4	Good	300	Has had a severe cold with severe cough, evening temperature 99°-100°-101° which lasted for sixteen days, although now normal. Enclosed find laboratory report of sputum. Tubercle bacilli not present in sputum as reported by Rhode Island State Board of Health, April 22, 1918.
6-11-18	105¾	22	74	98.4	Good	300	Condition excellent. Her chest is improving and she has much more endurance.
7-20-18	106¼	22	74	98.0	Good	360	General condition excellent.
9-11-18	108½	24	72	98.4	Good	450	Chest gradually improving. General condition fine. The improvement in Miss M——— M———'s appearance is very marked, more color, quicker, firmer step and activity. States she feels the best that she has in ten years or more.
10-14-18	108½	24	74	98.4	Good	540	No change in symptoms. Condition fine.
1-20-19	110¼	20	70	98.4	Good	540	Condition very good; feels stronger and

Dates.	Weight.	Respiration.	Pulse.	Temperature.	Appetite.	Dose; Drops In 24 Hours.	
							able to do her ordinary work without fatigue. Has very little cough.
3- 3-19	109½	20	70	98.4	Fairly good	540	General condition good. This very chronic case has kept along remarkably well; her endurance the past year has greatly improved as well as her general physical appearance. The sputum is free from tubercle bacilli. (Signed) H. M. SANGER, M.D.
4-14-19	108¼	20	72	98.6	Good	540	General condition very satisfactory.
6- -19	108¾	22	72	98.6	Good	540	This very chronic case is holding her own.
9-10-19	113¼	24	72	98.4	Good	540	This is one of the very chronic cases. Keeps along in very satisfactory condition. Has been in New Hampshire all summer, feels fine—took long walks without fatigue. Digestion good and no evidence of active disease.
12-29-19	114	28	74	98.4	Good	630	General condition good.

"May 22, 1920.

"MR. JAMES TODD,
"Pittsburgh, Penna.

"*Dear Mr. Todd:—*

"Miss M——— M——— is an arrested case that seems permanently so; she is doing so much better since using the capsules that she feels they must be a part of her regular ration.

"(Signed) H. M. SANGER, M.D."

Here we have a very definite case and a very chronic one, she having had the disease for fourteen years.

The respiration is high, the temperature characteristic of the disease, the tubercle bacilli are present in the mouth and she has had hemorrhages.

In addition to this we also have a view of the general result of the ordinary fresh air treatment, as she had been in a sanatorium, was discharged and the disease had again attacked her.

The note on the bottom of the diagnosis speaking of the case of W——— B——— requires explanation. Treatment in his case was discontinued by Doctor Sanger because he would not obey instructions, so his case does not appear in our published records.

Returning to our case: There is a steady, although slight, gain in weight, the temperature falls to normal, the tubercle bacilli disappear from the mouth and Doctor Sanger, while speaking repeatedly of the very chronic character of the case, thus emphasizing the handicap worked under, yet seems well pleased with the results and ends by speaking of the case as being permanently arrested.

The respiration does not go down as it should, but perhaps in these fourteen years the high respiration has become habitual.

THE CASE OF E——— G———

COMMITTEE

DIAGNOSIS BLANK

September 8, 1917.

Name: E——— G———. *Address:* Providence, R. I.

Nationality: Norwegian. *Occupation:* Machinist. *Social Condition:* Mechanic.

Age: 33 years. *Height:* 5 ft. 8 in. *Weight:* 155 pounds.

Temperature: 98.2. *Pulse:* 70. *Respiration:* 22. *Blood Pressure:* 125.

Patient's Characteristic Temperature:———.

Family History: Mother died from Pulmonary Tuberculosis, in 1903, at age of 53 —living in Norway. Patient has been in this country since 1898. Other family history negative.

Alcoholism: No. *Drug Addiction:* No. *Tobacco:* Smokes some.

Full History of Present Trouble: Haemoptysis January and April, 1916, considerable, since that time occasionally very little.

How Long Since Present Illness Began: About two years.

Coughs: No. *Night Sweats:* No.

Chills: No. *Expectoration:* Very little mornings.

Organs Involved: Lungs.

Is the Tubercle Bacilli Present in the Sputum: No.
Digestion Disturbance: None.
Urine Specific Gravity: 1.022. *Albumin:* No. *Sugar:* No.
Previous Treatment: No special treatment.
Diagnosis: Pulmonary Tuberculosis.

(Signed) H. M. SANGER, M.D.,
90 Waterman Street,
Providence, R. I.

REPORTS

Dates.	Weight.	Respiration.	Pulse.	Temperature.	Appetite.	Dose: Drops In 24 Hours.	Treatment Started: Sept. 8, 1917. Treatment Stopped: June 14, 1919.
Digest of the Diagnosis.							
9- 8-17	155	22	70	98.2	Good	30	No cough; no night sweats; expectoration very little in mornings. Has had a number of hemorrhages. Digestion very good.
Data from Physician's Written Reports During Treatment.							**Digest of the Physician's Written Reports During Treatment.**
9-19-17	155	20	72	98.2	Good	45	General condition very good and feels fine. Digestion very good.
10- 8-17	154½	20	72	98.2	Good	60	Has had a slight cold but otherwise fine; says he feels stronger and has more endurance.
10-23-17	152¾	20	72	98.2	Good	75	General condition good. Digestion good.
11-19-17	153½	20	72	98.2	Good	90	Feels much improved.
12- 8-17	153	20	72	98.2	Good	105	General condition very good; shows gradual gain.
1-12-18	153½	20	72	98.2	Good	120	General condition very good; much stronger; no cough.
2- 9-18	152½	24	76	98.2	Good	180	Has had an acute bronchitis, but is now clearing up.
3-20-18	151	24	74	98.2	Good	240	General condition improving.
5- 9-18	149	22	72	98.2	Good	300	Has been working harder the past two months which I believe accounts for the slight loss of weight.
6-20-18	147¾	22	72	98.2	Good	300	Physical signs improved. Working much more, the nature of which requires a great deal of activity. Change of clothing accounts for loss of weight.
7- 8-18	148½	22	70	98.2	Good	360	Chest gradually improving. General condition satisfactory.
9- 9-18	146¾	22	72	98.2	Good	450	Chest improved, very little evidence of tuberculosis. General condition very good. The slight loss in weight is probably due to the fact that his position, for the past few months, requires much more activity, and he is on his feet all day. Has charge of the repair work in a large foundry and machine shop. Muscles are very hard and firm. (Signed) H. M. SANGER, M.D.
10-19-18	147	22	74	98.3	—	450	Just recovering from an attack of Spanish influenza.
1-18-19	152½	18	70	98.2	Good	450	Condition excellent. Chest is practically normal. Will keep him on treatment during winter months and then would

Dates.	Weight.	Respiration.	Pulse.	Temperature.	Appetite.	Dose: Drops In 24 Hours.	
							consider it safe to discontinue treatment. (Signed) H. M. SANGER, M.D.
3–12–19	151¾	20	72	98.4	Good	450	Improved. With the exception of few rales in right lung, the chest is normal. General condition good. This case is practically cured. (Signed) H. M. SANGER, M.D.
4–12–19	149½	20	74	98.2	Good	450	General condition very good.
6–14–19	146	20	72	98.2	Good	450	Normal chest, disease arrested. General condition excellent. Have examined patient today and find practically a normal chest. I think we can cônsider this man cured and have discontinued treatment for the present. Will watch him from time to time and if there is any relapse will report. The change in weight is due to his change of employment; now walking and climbing ladders all day doing repair work in a large machine shop (foreman). (Signed) H. M. SANGER, M.D.

A study of the diagnosis shows that the only clear evidence of the disease is shown by the hemorrhages and that the case is of old standing, that is, chronic.

A study of the reports shows the man soon went to work and worked hard during most of the time he was under treatment.

The chest, steadily and definitely, improves and in the end Doctor Sanger says that he thinks the man is cured. He further speaks of keeping him under observation but never reports him as having any return of the disease.

THE CASE OF P——— O———

COMMITTEE

DIAGNOSIS BLANK

August 2, 1917.

Name: P——— O———. *Address:* Providence, R. I.

Nationality: American. *Occupation:* Clerk. *Social Condition:* Middle class.

Age: 51 years. *Height:* 5 ft. 8 in. *Weight:* 130 pounds.

Temperature:———. *Pulse:* 84. *Respiration:* 26. *Blood Pressure:* 132.

Patient's Characteristic Temperature: 99 to 101 evening.

Family History: No family history of tuberculosis.

Alcoholism: No. *Drug Addiction:* No. *Tobacco:* Smokes moderately.

Full History of Present Trouble: Consulted me a few days ago for slight pain in left side—feeling poorly and fatigued easily—poor appetite. Was not aware of any lung trouble.

How Long Since Present Illness Began: Probably within a year.

Coughs: Very little. *Night Sweats:* No.

Chills: No. *Expectoration:* Slight.

Organs Involved: Left lung.

Is the Tubercle Bacilli Present in the Sputum: Not found in one examination.

Digestion Disturbance: None.

Urine Specific Gravity: 1.022. *Albumin:* No. *Sugar:* No.

Previous Treatment: Not any for this disease. Have only seen him a few times for simple acute conditions.

Diagnosis: Pulmonary Tuberculosis.

(Signed) H. M. SANGER, M.D.,
90 Waterman Street,
Providence, R. I.

REPORTS

Dates.	Weight.	Respiration.	Pulse.	Temperature.	Appetite.	Dose: Drops In 24 Hours.	Treatment Started: Aug. 7, 1917.
							Digest of the Diagnosis.
8- 2-17	**130**	**26**	**84**	**99.0 to 101**	**Poor**	**30**	**Slight pain in left side. No night sweats. Coughs very little. Expectoration slight. Digestion very good. General condition fair.**

Data from Physician's Written Reports During Treatment.							**Digest of the Physician's Written Reports During Treatment.**
9-11-17	132½	20	72	98.4	Good	60	General condition same as previously reported.
10- 5-17	134	22	74	98.2	Good	75	Slightly less cough. Feels good.
10-20-17	132	24	72	98.4	Good	90	General condition good; digestion good.
11-19-17	130½	24	76	98.2	Good	105	The small loss of weight probably due to the fact that he has been working a little harder than usual—twice since last report an evening temperature of 99° after an unusually busy day at the store where he is employed.
12-18-17	133¼	24	72	98.0	Good	120	Very little cough and expectoration. Slight gain in strength. Rhode Island State Board of Health reports tubercle bacilli not present in sputum.
1-22-18	133¼	26	76	97.0	Good	135	General condition practically same as last report. Has been working rather hard the past two months. Digestion very good. Very little cough and expectoration.
2-21-18	134¾	26	78	98.6	Good	180	Seems to be gradually growing stronger.
3-16-18	131½	24	76	98.0	Good	240	General condition unchanged.
5-10-18	134	22	74	98.4	Good	240	No apparent change since last report.
6-14-18	136	24	78	98.2	—	300	Physical signs improved. Had a cold in early part of the month.
7-18-18	136	24	78	98.4	Good	360	No change in symptoms. Condition good.
9-10-18	136½	24	78	98.6	Good	450	Condition good; works continually and hard and only has rare rise in temperature. Chest gradually improves.
10-24-18	—	—	—	—	—	540	Confined to bed with severe case of influenza.
3- 6-19	132¾	20	74	98.6	Good	540	General condition is very good; physical signs almost normal. I believe the present weight is normal for this man. No cough or expectoration. The temperature is always normal except from overwork when he is extremely tired. (Signed) H. M. SANGER, M.D.

Dates.	Weight.	Respiration.	Pulse.	Temperature.	Appetite.	Dose: Drops In 24 Hours.	
4-22-19	137	20	74	98.3	—	540	General condition good.
6-1-19	138	20	72	98.4	Good	630	Disease arrested, but am keeping him along with treatment for safety. (Signed) H. M. SANGER, M.D.
10-2-19	136	22	72	98.4	Good	630	No acute signs in symptoms; general condition shows disease arrested. (Signed) H. M. SANGER, M.D.
12-19-19	137	22	72	98.2	—	630	General condition good.

"May 22, 1920.

"MR. JAMES TODD,
"Pittsburgh, Penna.

"*My dear Mr. Todd:*

"P———— O———— is in very good condition and is practically well, although he states that he feels much stronger when taking the capsules.

"Yours truly,
"(Signed) H. M. SANGER, M.D."

The diagnosis shows high respiration, pulse up and temperature from 99° to 101°.

The reports show no temperature after the first month, the pulse and respiration gradually recede, the man works continually and hard, the weight increases, the disease is first arrested and finally Doctor Sanger speaks of him as practically well.

It will be noticed that we place very little restriction on the action of our patients; the records show that we rely on the power of the oxygen and allow them to return to their daily vocation very soon.

The strength they receive from the intensified oxygen enables us to speedily do away with ordinary restrictions.

THE CASE OF L——— R———

COMMITTEE

DIAGNOSIS BLANK

November 25, 1917.

Name: L——— R———. *Address:* Ellsworth, Penna.

Nationality: American. *Occupation:* Tipple man. *Social Condition:*———.

Age: 19 years. *Height:* 5 ft. 9¼ in. *Weight:* 130 pounds.

Temperature:———. *Pulse:* 98. *Respiration:* 17. *Blood Pressure:* 120.

Patient's Characteristic Temperature: 99° to 100½°.

Family History: Negative as to tuberculosis. One sister has pernicious anaemia.

Alcoholism: No. *Drug Addiction:* No. *Tobacco:* Not at present.

Full History of Present Trouble: Illness began thirteen weeks ago with pain in chest, cold, night sweats, cough and slight expectoration. Temperature ranged from 99° in A.M. to 100½° in P.M. Loss of weight, weakness and gastric disturbance. Increased vocal resonance and vocal fremitus over small area at angle of scapula. Expectoration more profuse on arising in morning.

How Long Since Present Illness Began: Thirteen weeks.

Coughs: Slight. *Night Sweats:* Yes.

Chills: Yes. *Expectoration:* Slight.

Organs Involved: Lung.

Is the Tubercle Bacilli Present in the Sputum: Sputum not examined.

Digestion Disturbance: Slight.

Urine Specific Gravity: 1.016. *Albumin:* No. *Sugar:* No.

Previous Treatment: Open air bedroom, forced feeding eggs, half cream and half milk. Cod liver oil with hypo-phosphites.

Diagnosis: Tuberculosis.

(Signed) W. L. BOTKIN, M.D.,
Ellsworth, Penna.

REPORTS

Dates.	Weight.	Respiration.	Pulse.	Temperature.	Appetite.	Dose: Drops In 24 Hours.	Treatment Started: Nov. 28, 1917. Treatment Stopped:
							Digest of the Diagnosis.
11-25-17	130	17	98	99.0 to 100.5	Good	30	Patient has night sweats, slight cough and expectoration; also chills and slight digestive disturbances. Increased vocal resonance. Loss of weight.
Data from Physician's Written Reports During Treatment.							Digest of the Physician's Written Reports During Treatment.
12-29-17	135	20	90	98.4	Very good	90	Very much improved; no expectoration but slight cough. Digestion very good.
1-31-18	137½	24	84	99.2	Good	180	Condition improved. Rise in temperature is no doubt due to an attack of laryngitis. Patient working outside daily.
2-18-18	134	24	90	99.0	Good	210	General condition good.
3- 5-18	133	22	72	98.2	Good	210	Patient is working and feels good.
3-23-18	131½	22	85	98.3	Good	240	Has lost some weight but feels good; has good appetite and is working steadily.
4- 6-18	132	20	82	99.0	Good	240	General condition fair. Patient is working steadily.
4-23-18	133	24	82	99.0	Good	240	Patient feeling good and working every day. Took an active part in a dance on April 20th.
5- 8-18	133	22	84	98.4	Good	240	General condition fair. Working steadily.
5-23-18	130	24	80	99.4	Fair	240	Same as previously reported.
6- 9-18	130	20	72	98.2	Good	240	General condition good.
6-24-18	130½	22	88	98.2	Good	320	General condition good; working daily.
7- 8-18	130½	22	90	98.3	Good	360	General condition good.
7-22-18	133	24	84	98.2	Good	480	No change in symptoms. General condition good.
8- 9-18	133	24	86	98.2	Good	480	No change in symptoms. General condition good.
8-23-18	133	24	84	98.2	Good	480	No change in symptoms. General condition good.
9- 9-18	137	24	82	98.3	Good	270	Patient's appetite failed and he became sick at the stomach. Stopped Ozonate for a week and then resumed and he is now doing fine. General condition good.
9-24-18	137	18	72	98.3	Good	360	General condition good.
10- 7-18	133	24	86	98.2	Good	360	Has slight cold, but working steadily.
12-13-18	135	18	80	98.4	Good	180	No change in symptoms.
12-23-18	135	18	72	98.2	Good	180	No change in symptoms.
1-20-19	135	18	72	98.3	—	180	General condition good. Has had a cold but continued working regularly.

"December 7, 1920.

"*My dear Mr. Todd:*

"Physical examination of L——— R——— shows Pulse 72, Respiration 18, Temperature 98.3° Fr., Lungs negative. Has gained 12 pounds in weight since illness, is working every day, has had no illness since last treated with Ozonate, no cough or expectoration, in fact enjoys life a well man.

"(Signed) E. M. ELLIS, M.D."

We now reach another of Doctor Ellis's cases. Doctor Ellis has cured every one of his cases, although they have all been among the laboring class and consequently have had no chance for special care or rest; in no case did the patient stop working.

The diagnosis is by Doctor Botkin and shows a very serious condition of affairs. The temperature is from 99° to 100½°, the heart action almost one hundred and the distressing symptoms of night sweats and chills are present. The sputum was not examined.

Please turn back and study the reports on this case again as we are here face to face with tuberculosis and these questions are very important.

See the respiration, the weight, the pulse, the temperature fluctuate back and forth as they evidence the struggle between the tubercle bacillus and its only natural opponent—OXYGEN—and the life of a boy of nineteen years of age is saved as the tubercle bacillus is pushed from its prey.

The boy becomes absolutely normal in December, 1918, and two years later, in December, 1920, is again examined and found in perfect health.

The world says it wants the great white plague cured. Have we it before our eyes and what shall we do? Surely it is worth the trouble of going and hunting this boy up. For our part we pass on to drive the wedge in further.

The Case of M——— D———

COMMITTEE

Diagnosis Blank

April 27, 1918.

Name: M——— D———. *Address:* Ellsworth, Penna.
Nationality: American. *Occupation:* Fire Boss. *Social Condition:* Good.
Age: 32 years. *Height:* 5 ft. 11 in. *Weight:* 145 pounds.
Temperature: 98°. *Pulse:* 95. *Respiration:* 30. *Blood Pressure:* 130.
Patient's Characteristic Temperature:———.

Family History: Married. Father died at 34 years, Bright's disease. Mother living in good health. One brother living in good health. Two half brothers living in good health. Three sisters living in good health. Wife and three children in good health.

Alcoholism: Drank heavily for two years five years ago. *Drug Addiction:* No. *Tobacco:* None.

Full History of Present Trouble: Two months ago began feeling weak and persistent cough. Pain in right side at times. Occasional night sweats which have gradually grown worse.

How Long Since Present Illness Began: Two months.
Coughs: Yes. *Night Sweats:* Yes.
Chills: Yes. *Expectoration:* Yes.
Organs Involved: Lungs.
Is the Tubercle Bacilli Present in the Sputum: Yes.
Digestion Disturbance: Appetite good till one week ago.
Urine Specific Gravity: 1.012. *Albumin:* No. *Sugar:* No.
Previous Treatment: Full doses of Calcrecose.
Diagnosis: Tuberculosis.

(Signed) E. M. Ellis, M.D.,
Ellsworth, Penna.

Remarks

Patient was examined at State Tubercular Dispensary April 25th and was advised to go to sanatorium. Does not want to go to sanatorium.

REPORTS

Dates.	Weight.	Respiration.	Pulse.	Temperature.	Appetite.	Dose: Drops In 24 Hours.	Treatment Started: April 27, 1918. Treatment Stopped: Jan. 28, 1919.
Digest of the Diagnosis.							
4-27-18	145	30	95	98.0	Good until one week ago	160	Persistent cough; expectoration; chills; occasional night sweats, growing worse. Tubercle bacilli present in sputum.
Data from Physician's Written Reports During Treatment.							**Digest of the Physician's Written Reports During Treatment.**
5- 8-18	147½	24	96	98.4	Fair	320	General condition fair, improving. No night sweats since started Ozonate. Cough better. Started 40 drops 4 times a day, increased to 60 drops second week, starts with 80 drops this date. Report from Department of Health Laboratories shows tubercle bacilli present.
5-23-18	150	26	80	98.2	Good	320	Working every day. Still has some night sweats.
5-31-18	151	28	90	98.4	Good	320	Two night sweats during the week.
6- 7-18	152½	24	74	98.2	Good	320	General condition good. One night sweat
6-17-18	155	24	80	98.3	Good	360	General condition good. No night sweats.
6-24-18	156	24	82	98.2	Good	360	General condition good. No night sweats. Working every day.
7- 8-18	157½	24	72	98.2	Good	360	General condition good. No night sweats. Working daily. Complains of slight pain under right shoulder.
7-23-18	158½	24	80	98.2	Good	600	No change in symptoms.
7-29-18	—	—	—	—	—	—	Pennsylvania State Board of Health reports tubercle bacilli not present in sputum.
8- 8-18	158	24	80	98.4	Good	720	Patient feeling fine, eating well, working daily.
8-21-18	156½	22	76	98.3	Good	480	No change; general condition good.
9- 9-18	158	22	82	98.6	Good	600	No change in symptoms.
9-20-18	158	18	72	98.2	Good until now	600	Pain in right side of abdomen. On 9/24 diagnosed appendicitis and sent to hospital. No report as yet from hospital.
10- 8-18	156	20	80	98.3	Good	480	Discontinued Ozonate for one week. Appendicitis condition subsided; resumed Ozonate and is doing well. Back to work.
12- 9-18	164	20	72	98.2	Good	360	
1-20-19	165	20	72	98.2	—	270	General condition good. Working every day.
1-28-19	165	18	72	98.2	Good	—	On close examination find no evidence of tuberculosis whatever and I believe him to be cured and have discontinued treatment. He weighs as much as he ever did. (Signed) E. M. ELLIS, M.D.

NOTE: The patient commenced working at coal works in one month from start of treatment; also that T.B. had disappeared from sputum when tested for three months after treatment commenced. This certainly reduced, if it did not eliminate danger of contagion to his associates.

The diagnosis shows a very high respiration and pulse, no temperature, the tubercle bacilli found in the mouth, night sweats, chills, coughs and expectoration, a very definite case.

The reports show the steady wresting of the tubercle bacillus from its prey as it once again meets the power of intensified oxygen.

The weight rises steadily from 145 to 165 pounds, a gain of twenty pounds.

The respiration of thirty just as steadily recedes until it becomes normal at eighteen.

The same is true of the heart action as it starts at ninety-five and steadily falls to normal at seventy-two.

The Pennsylvania State Board of Health tests the sputum on July 29, 1918, and finds it free from the tubercle bacilli.

The night sweats and chills disappear and Doctor Ellis discharges him as cured in nine months.

Again our element asserts its power!

M——— D——— left Ellsworth shortly after being cured. Doctor Ellis told the writer that he did not know where he was but had heard a rumor that he was drinking again and was sick, so we cannot give any late information; it may or may not be so. We state the rumor because we tell everything connected with our work.

However this does not affect the fact that the oxygen did its work while it was used.

THE CASE OF G——— P———

COMMITTEE

DIAGNOSIS BLANK

August 3, 1917.

Name: G——— P———. *Address:* Providence, R. I.
Nationality: American. *Occupation:* Clerk. *Social Condition:* Middle class.
Age: 29 years. *Height:* 5 ft. 8½ in. *Weight:* 118 pounds.
Temperature:———. *Pulse:* 76. *Respiration:* 24. *Blood Pressure:* 124.
Patient's Characteristic Temperature: 99 to 101° evening.
Family History: No tubercular family history.
Alcoholism: No. *Drug Addiction:* No. *Tobacco:* No.
Full History of Present Trouble: G——— P——— has been working as a clerk until ten days ago. He gives a history of frequent colds with pain in left pleura occasionally for past year. Was not aware that he had evening temperature and considered himself fairly well, good appetite and good endurance. Probably this case dates back about a year.
How Long Since Present Illness Began: About one year.
Coughs: Very little. *Night Sweats:* None.
Chills: No. *Expectoration:* Very little.
Organs Involved: Both lungs.
Is the Tubercle Bacilli Present in the Sputum: Yes.
Digestion Disturbance: No.
Urine Specific Gravity: 1.022. *Albumin:* No. *Sugar:* No.
Previous Treatment: Has had no previous treatment.
Diagnosis: Pulmonary Tuberculosis.

(Signed) H. M. SANGER, M.D.,
90 Waterman Street,
Providence, R. I.

REPORTS

Dates.	Weight.	Respiration.	Pulse.	Temperature	Appetite.	Dose: Drops In 24 Hours.	Treatment Started: Aug. 7, 1917.
				Digest of the Diagnosis.			
8- 3-17	118	24	76	99.0 to 101	Good	30	No night sweats; coughs very little; expectoration very little. Digestion very good. Frequent colds with pain in left pleura. Tubercle bacilli present in sputum. Both lungs involved.
Data from Physician's Written Reports During Treatment.							Digest of the Physician's Written Reports During Treatment.
9- 7-17	—	22	74	98.6	Good	60	General condition very good. Seems to be gaining in strength and has excellent digestion.
10- 2-17	122	20	72	98.2	Good	75	General condition very good; much stronger and has little or no cough.
10-23-17	124½	20	72	98.2	Good	90	Condition improving.
11-19-17	127	20	72	98.2	Good	105	General condition very good; very little coughing and no expectoration.
12-14-17	128½	20	72	98.2	Good	120	Digestion very good. Feels fine, improving all the time. You will notice that in August, 1917, there were tubercle bacilli present in sputum and temperature—December, 1917, tubercle bacilli *not present* in sputum, gained ten pounds and no temperature. (Signed) H. M. SANGER, M.D.
1-22-18	130¼	20	74	98.2	Good	135	Steadily gaining. Physical signs almost absent.
2-20-18	131	22	74	98.2	Good	180	Just recovered from a case of mumps; otherwise condition good.
3-19-18	128	22	72	98.2	Good	240	General condition improving.
5- 3-18	129	20	72	98.2	Good	300	General condition very good; works every day and no temperature. Physical signs very much improved.
6-17-18	126¾	20	72	98.2	Good	300	In excellent condition. The disease is surely arrested; chest practically normal. Loss of weight due to change in clothing. (Signed) H. M. SANGER, M.D.
7-23-18	127	20	72	98.2	Good	300	No change in symptoms; condition excellent.
9-14-18	131¼	22	74	98.4	Good	300	General condition excellent. Has been in charge of boys' Y. M. C. A. camp all summer; fine physical condition. Consider him cured. Keeping him on present dose for a time and will then decrease. (Signed) H. M. SANGER, M.D.
10-21-18	128½	22	72	98.4	Good	360	General condition excellent. He has taken a new position requiring much walking which probably accounts for slight loss in weight. I cannot detect anything abnormal in chest. (Signed) H. M. SANGER, M.D.
1-25-19	139¼	18	70	98.2	Good	360	General condition excellent. Working each day without fatigue.
5-14-19	139½	18	70	98.2	Good	450	Consider this case cured. Keeping him along for a while. (Signed) H. M. SANGER, M.D.

Again we return to Doctor Sanger's cases to work, exclusively through cures, up to one of the most brilliant pieces of work our physicians have done for us.

The diagnosis in this case shows full evidence of tuberculosis—high respiration, temperature 99° to 101°, both lungs involved and the tubercle bacilli in the mouth.

The reports show an almost steady weight gain amounting to over twenty-one pounds.

The respiration is steadily forced down to normal while the temperature never asserted itself after the oxygen took control, and the tubercle bacilli soon disappeared from the mouth and Doctor Sanger discharges the man as cured.

Another life saved, more misery prevented. We will carry this record of the power of oxygen still further for we have much to accomplish as we have the evidence of the greatest boon ever within human grasp and we intend to use it.

THE CASE OF G——— R———

COMMITTEE

DIAGNOSIS BLANK

September 13, 1917.

Name: G——— R———. *Address:* Providence, R. I.

Nationality: English. *Occupation:* Machinery Inspector. *Social Condition:* Mechanic.

Age: 63 years. *Height:* 5 ft. 7 in. *Weight:* 141 pounds.

Temperature: 99°. *Pulse:* 76. *Respiration:* 24. *Blood Pressure:* 180.

Patient's Characteristic Temperature: 99° at 4 P.M.

Family History: Negative.

Alcoholism: No. *Drug Addiction:* No. *Tobacco:* Smokes moderately.

Full History of Present Trouble: First symptoms February, 1917—began with hacking cough, later what he called bronchitis. Had been treated by throat specialist for pharyngitis for several months. Has not worked since June, 1917 and went to White Mountains—not improved.

How Long Since Present Illness Began: Probably about a year.
Coughs: Considerably. *Night Sweats:* No.
Chills: No. *Expectoration:* Considerable.
Organs Involved: Lungs—left apex principally.
Is the Tubercle Bacilli Present in the Sputum: Yes.
Digestion Disturbance: None.
Urine Specific Gravity: 1.013. *Albumin:* No. *Sugar:* No.
Previous Treatment: Treated for Bronchitis.
Diagnosis: Pulmonary Tuberculosis.

(Signed) H. M. SANGER, M.D.,
90 Waterman Street,
Providence, R. I.

REMARKS

Saw this man for the first time today. Early but pronounced tuberculosis. This man was not aware that he had tuberculosis and has had no treatment for same.

Dates.	Weight.	Respiration.	Pulse.	Temperature	Appetite.	Dose: Drops In 24 Hours.	Treatment Started: Sept. 13, 1917. Treatment Stopped: Mar. 14, 1919.
Digest of the Diagnosis.							
9-13-17	141	24	76	99.0	Good	45	**General condition good except high blood pressure. Coughs considerably and expectorates considerably. Tubercle bacilli present in sputum.**
Data from Physician's Written Reports During Treatment.							Digest of the Physician's Written Reports During Treatment.
10- 8-17	141	22	74	98.4	Good	60	General condition is now about the same as when last reported, but a week ago had a severe cold with temperature about 100°, considerable cough and expectoration—an acute bronchitis—has completely recovered from the bronchitis without any damage to lungs.
10-23-17	142½	22	74	98.4	Good	75	Improved since last report.
11-19-17	147¾	22	72	98.2	Good	90	Has made a very satisfactory gain; feels much better and wants to go back to work. Very little cough, no expectoration and physical signs noticeably improved.
12- 5-17	—	—	—	—	—	—	Rhode Island State Board of Health reports that examination of sputum does not show the presence of any tubercle bacilli.
12-18-17	151¼	24	72	98.2	Good	105	Steady gain; practically no cough.
1-11-18	152	24	74	98.2	Good	120	Greatly improved; lungs practically negative. No cough or expectoration. (Signed) H. M. SANGER, M.D.
2-15-18	153¾	24	74	98.2	Good	180	Continues gain.
3-20-18	154¾	24	74	98.2	Good	240	General condition excellent. Second examination of sputum by Rhode Island State Board of Health shows absence of tubercle bacilli.
5- 2-18	153	20	72	98.2	Good	300	General condition excellent. Practically no physical signs. Case is evidently reaching point where we can say cured. (Signed) H. M. SANGER, M.D.
6- 3-18	148¾	20	72	98.2	Good	300	General condition very good. G——— R——— is practically well; the physical signs are quite normal and the sputum does not show any tubercle bacilli. He has gained much in strength, the apparent loss in weight is undoubtedly due to change to lighter clothing. It seems to me that it would be safe to discontinue the Ozonate capsules in another month or two. (Signed) H. M. SANGER, M.D.
7-10-18	147½	20	72	98.2	Good	300	General condition excellent.
9-21-18	148	22	72	98.4	Good	300	General condition excellent. Physical signs negative. Apparently cured. Keeping the same dose for a time longer. Working every day. (Signed) H. M. SANGER, M.D.
10-26-18	—	—	—	—	—	—	Reported by telephone that he was as well as ever. Apparently cured.
3-14-19	—	—	—	—	—	—	Cured. Treatment discontinued. (Signed) H. M. SANGER, M.D.

Here we have a well-defined case of tuberculosis, the diagnosis showing a temperature of 99° F., respiration 24, considerable cough and expectoration, and the tubercle bacilli found in the mouth.

The man is sixty-three years of age, so that he must rely more on the power of the oxygen than a younger and more vigorous man.

The reports are very clear and decisive of the questions involved.

We look down the temperature column and we find that the temperature, which must largely indicate whether the germs are in control or not, is immediately forced to the normals, which fact clearly shows the oxygen in control.

In three months the Rhode Island State Board of Health reports the absence of the germ in the mouth.

The man gains in weight, the respiration gradually falls and he goes back to his work and in due time Doctor Sanger discharges him as cured.

We might say much more but we would far rather have the *reader study the record.*

THE CASE OF G——— G———

The writer has always contended that it is of primary importance that a new process, such as this one of oxidation, should never be strained in its early stages.

The way to develop such a process so as to involve the minimum of risk, is undoubtedly to take mild cases first and later, when we have the benefit of greater experience, to gradually extend the field but our plans always seem to get shattered and instead of gradual progression we are continually being thrown against desperate situations.

The history of our work shows case after case that, at the start, seems hopeless and yet we pull through to wonderful victories. There can be but one answer to such a condition and that answer is that intensified oxygen has the power, and more than the power, that we claim for it, else we could never have fought death, as we have fought it and so uniformly won the victory.

We well knew that tuberculosis of the larynx was considered the most fatal form of the disease; generally conceded as quickly and absolutely fatal and we had fully determined to let it alone for long to come.

Well does the writer remember the anxiety that came to him when this case was taken, as he was pledged to tell the truth and all the truth, as he saw it; and now was brought face to face with the most vicious form of the disease.

We did not tell Doctor Sanger to drop the case. We could not, a young man of twenty-three, just back from France, stricken down, a human life at stake—one cannot stop.

What we could and did do, was to rely on the power of oxygen and the fact that by this time we well knew Doctor Sanger. We knew his resourcefulness and ability and that he had well trained himself in the use of the oxidized compounds and it is only due to him for the writer to say that he knows no man whom he would be more willing to stand beside in such a situation.

The reader has perhaps noticed that in all the previous cases the dose has been small at the beginning and has later been gradually increased but here the scene changes, Doctor Sanger well knew that half way measures could never control this situation; time was time and power was power, one against the other, there was no time to be wasted in a cautiously increasing dose.

Doctor Sanger met the tubercle bacilli in the throat with such an overpowering quantity of oxygen (540 drops in 24 hours quickly increased to 630) that it never had a chance to further assert itself.

In one month the patient gained nineteen pounds and the temperature and respiration were almost to the normals; the man was saved.

We particularly request that the reader study this case very closely; note Doctor Sanger's remark at the bottom of the diagnosis sheet about laryngeal involvement and read carefully his reports until you find him saying, "HAVE NEVER SEEN A LARYNGEAL CASE IMPROVED BEFORE."

There has been some correspondence in regard to this case which we include as necessary; please note that in his last letter Doctor Sanger says, "He is undoubtedly cured."

COMMITTEE

DIAGNOSIS BLANK.

March 14, 1919.

Name: G——— G———. *Address:* Providence, R. I.

Nationality: Swede. *Occupation:* Machinist. *Social Condition:* Mechanic.

Age: 23 years. *Height:* 6 ft. 2 in. *Weight:* 180½ pounds.

Temperature:———. *Pulse:* 74. *Respiration:* 24. *Blood Pressure:* 122.

Patient's Characteristic Temperature: 99.6 to 101° evenings; subnormal mornings.

Family History: No previous cases in family—parents living—brothers and sisters in good health.

Alcoholism: No. *Drug Addiction:* No. *Tobacco:* Yes.

Full History of Present Trouble: Discharged soldier, served in France. Returned one month ago. Bronchial pneumonia three weeks ago. Both lungs involved, also larynx. Very acute case. Has evening temperature of 99.6 to 101° past few days—subnormal mornings.

How Long Since Present Illness Began: Three weeks.

Coughs: Some. *Night Sweats:* Yes.

Chills: No. *Expectoration:* Little.

Organs Involved: Lungs and larynx.

Is the Tubercle Bacillus Present in the Sputum: Yes.

Digestion Disturbance: None.

Urine Specific Gravity: 1.018. *Albumin:* No. *Sugar:* No.

Previous Treatment: Not any.

Diagnosis: Pulmonary Tuberculosis.

(Signed) H. M. SANGER, M.D.,
90 Waterman Street,
Providence, R. I.

REMARKS

In my experience, have found these cases with laryngeal involvement rapid. Speaks in a loud whisper considerably. Using local treatment for throat.

REPORTS

Dates.	Weight.	Respiration.	Pulse.	Temperature	Appetite.	Dose: Drops In 24 Hours.	Treatment Started: Mar. 14, 1919. Treatment Stopped: Dec. 30, 1919.
Digest of the Diagnosis.							
3-14-19	180½	24	74	99.6 to 101.0 evenings; mornings sub-normal	—	540	Discharged soldier who served in France; returned one month ago. Bronchial pneumonia three weeks ago. Both lungs involved, also larynx. Very acute case. Has evening temperature 99.6° to 101° past few days—subnormal mornings. Has night sweats, some cough and little expectoration. Tubercle bacilli present in sputum.
Data from Physician's Written Reports During Treatment.							Digest of the Physician's Written Reports During Treatment.
4-14-19	199	20	72	98.6	Good	630	No perceptible change in symptoms except less huskiness of voice. General condition very good; no irritation when swallowing.
6-12-19	199	22	72	98.8	Good	630	The extreme hoarseness has disappeared and now loss of voice only when attempting to speak loudly or sing. General condition very good. Evidently this remarkable improvement is due to the fact that the case was of such recent origin. In connection with the Ozonate I have used T.B. vaccine.
10- 3-19	197	20	72	98.4	Good	630	Voice normal, hoarseness entirely disappeared, vocal cords look normal. General condition excellent. This seems quite a remarkable case—its very acuteness—its quick response and apparent cure. The diagnosis confirmed by laboratory tests. The patient had always been perfectly well up to the time of the pneumonia following his discharge from the army. Has a wonderful development of chest and muscles. HAVE NEVER SEEN A LARYNGEAL CASE IMPROVED BEFORE. (Signed) H. M. SANGER, M.D.

"DOCTOR H. M. SANGER, "July 29, 1919.
"90 Waterman Street,
"Providence, R. I.

"*My dear Doctor Sanger:*

"I am just getting ready to start for a month's vacation and I have been so busy lately that I have not written you about a matter which I consider very important.

"In the case of G——— G———— (throat tuberculosis). This is the first case of this kind that we have taken as we had always kept away from it, but it seems to be progressing remarkably well. I have noted from your report that you have used the tubercular vaccine in this case. I have long thought that in treating tubercular cases probably the best course to pursue would be to support the vaccine inoculation with the oxygen treatment and I am very glad to see that you have commenced this course. I would like to know what you think about it for general use and especially for these chronic cases which drag so.

"Yours very truly,
"(Signed) JAMES TODD"

"MR. JAMES TODD, "October 3, 1919.
Pittsburgh, Penna.

"*Dear Mr. Todd:*

"In regard to the vaccine treatment: Heretofore I have used vaccines only in chronic cases, and I believe that is their proper place, although in the case of G——— G———— it was used with the idea of raising his resistance to the highest possible point to guard against a general lung involvement. During the treatment of this case a frequent and thorough spraying of the larynx with a 1% formalin solution was employed.

"Yours truly,
"(Signed) H. M. SANGER, M.D."

"DOCTOR H. M. SANGER, "January 27, 1920.
"90 Waterman Street,
"Providence, R. I.

"*My dear Doctor Sanger:*

"The case of G——— G———:

"This case showed in the original diagnosis that the T. B. was found in the mouth and it will be very important for us to have, before closing the case out, another sputum test made which should now be negative and I request that you endeavor to accomplish this for us.

"I find that people who see our work seem to be more impressed with the presence of the T. B. at the start and its absence at the end than almost any other data that we can give them.

"Will you send us this information as soon as you reasonably can as I want to work up the case as soon as you are perfectly willing to certify it as cured, which I take to be the case from your recent letter.

"Yours very truly,
"(Signed) JAMES TODD"

"April 8, 1920.

"MR. JAMES TODD,
"Pittsburgh, Penna.

"*My dear Mr. Todd:*

"Soon after receiving your request for report on sputum examination from G——— G———, word was sent to him asking that he supply us with the specimen; but as yet he has failed to do so and I have neglected to write again.

"I know that G——— G——— will be very glad to do so, it being a case of lapse of memory.

"The report will be forwarded to you at the earliest possible moment.

"Yours truly,
"(Signed) H. M. SANGER, M.D."

"May 22, 1920.

"MR. JAMES TODD,
"Pittsburgh, Penna.

"*My dear Mr. Todd:*

"When your letter was received I again wrote G——— G——— asking him to send me the sputum. His mother sent me word today that he promised to do so; but he is working out of town and will at his first opportunity. He expressed a doubt of his ability to raise enough sputum to be examined.

"He is undoubtedly cured.

"Yours truly,
"(Signed) H. M. SANGER, M.D."

The reader now has the record of this case—it seems to the writer that the record needs no words for words cannot strengthen self-evident facts.

We have now given all the cases of tuberculosis which we have had in which the record has been properly kept and it only remains for us to state that we have knowingly concealed no fact.

Oxidation through the nutritive system is probably very much weaker than oxidation through the lungs, such as was used with the animals. If a properly equipped institution was at our disposal the writer believes that practically all the cases, excepting those involving extensive tubercular devastation, could eventually be cured.

So far we have worked alone for twelve years; we have now reached a crisis which we explain in its proper place; for the reader the question is as to whether he has seen the cure of the great white plague and having seen it, will he remain inert.

NEPHRITIS

(BRIGHT'S DISEASE)

Soon after the publication of the first edition of this book we concluded to continue our work with the class of germ diseases which are, comparatively speaking, short in their cycle, that is those in which the death or recovery is a matter of a short time.

Our reason for taking this course was the very great difficulty experienced in getting correct records kept for periods of a year or more.

However we did not think it wise to discontinue our tubercular work because it had been used as the demonstrator of the action of oxygen in the very extensive animal work and to have discontinued it would have led to probable misconstruction of our reasons.

In placing before you an entirely new phase of the power of oxygen we must insist that you understand that we are not demonstrating the cure of various diseases—our work is to place before you the power of oxygen; its dominance in organic life; the cure of the specific case is solely the demonstrator.

We wish again to emphasize, as strongly as possible, that our view is *not* that we have a cure-all but simply that we have our hands on a power to which we have as yet been unable to ascribe limits. As yet the limits have not been in any sense reached, and the great blessing of the thing is that it is probably more far reaching than even we realize.

Limits it must have, only they are not yet in sight. Nature seems to love to bring out her definite laws by demonstrating her power to override them.

One of the most definite and universal laws we have is that a body must become larger when heated and, inversely, smaller when cooled, yet bismuth contracts under heat and expands when cooled, and the writer has always been alive to the possibility of finding a germ which will thrive under the oxygen impulse.

Unless we are fully alive to the possibilities of this situation it will mean death to the patient.

In planning this book we decided to omit the whole chapter on Nutritive Oxidation appearing in the first edition, excepting the cases of Bright's disease. Our reasons for this course were that, with the exception of the nephritis cases, the records had been too loosely kept to be of value and also that we did not feel at liberty to give the names of the patients as we had never obtained their consent to such a course.

In the cases of nephritis the urine analyses made a satisfactory record.

The following cases have become of much greater value than when first published because it is now *nine years since we started the work* and we are able to give the definite history of them all.

In order to show that the years have made no change in our views we place the cases exactly as they were written, word for word, five years ago, using quotation marks to separate the old writing from the new.

"In addition to the above we are citing five cases that have been diagnosed as Bright's disease. These cases are chosen not because they show the best results, but because they are the only ones in which we have succeeded in collecting sufficient data for use."

URINE COMPARISONS

Patient No. 4

	At start 6–28–12	8–1–12	9–9–12	12–10–12	6–5–13
PHYSICAL EXAMINATION:					
Volume, 24 hrs. c.c....	1,560	1,320	1,140	1,350	1,320
Solids, 24 hrs. grams..	33	40	50	57	46
Appearance..........	Slightly turbid	Turbid	Turbid	Turbid	Turbid
Sediment............	Small	Heavy	Heavy	Heavy	0
Reaction............	Slightly acid	Acid	Neutral	Slightly acid	Acid
Sp. Gr. at 60° F......	1.009	1.013	1.019	1.018	1.015
CHEMICAL:					
Urea, per cent........	.85%	1.10%	1.30%	.80%	.75%
Albumin............	Strong trace	Trace	Trace	0	0
Sugar...............	0	0	0	0	0
Acetone.............	Present	Present	Present	Present	Present
Diacetic acid.........	0	0	0	0	0
Indican.............	Above normal	Present	Present	Present	Present
Blood pigment.......	Present	0	0	0	0
Diazo reaction.......	—	—	—	—	Negative
MICROSCOPICAL:					
Casts					
Granular........	Few	Few	Few	Few	0
Hyaline.........					0
Cylindroids..........	0	Few	Few	Few	Few
Mucus..............	Slight	0	0	0	Many threads
Amorphous deposit ...	Phosphates	0	0	0	Small amount
Red blood cells.......	0	0	0	0	0
Leucocytes..........	Occasional	Few	0	0	Very few
Crystals.............		Urates	Uric acid	Urates uric acid	0
Epithelial cells.......	Many small and round	Many small	Many small	Few round Many small	Many squamous and round

"In this case, as shown by the analyses, all albumin has disappeared. Blood pigment, which was present at the start, also disappears. The leucocytes are gradually disappearing and the indican is lowered. Note carefully that all casts have disappeared. The patient is reported to us as stronger and generally better. There was no change in diet, as the patient was on diet when we commenced the treatment.

"Note that the changes are very radical and that they are all towards health. The treatment in this case practically covers one year. When we consider the facts, viz.: that the patient is essentially a frail woman, over fifty years o age and weighing at the start of the treatment but one hundred and two pounds, can any reasonable critic deny that this last analysis is normal?"

URINE COMPARISONS

Patient No. 5

	At start 6-12-12	8-13-12	9-18-12
PHYSICAL EXAMINATION:			
Volume, 24 hrs. c.c.	1,500	1,100	1,040
Solids, 24 hrs. grams		46	39
Appearance	Clear	Turbid	Turbid
Sediment	0	Abundant	Slight
Reaction	Acid	Acid	Slightly acid
Sp. Gr. at 60° F.	1.010	1.018	1.016
CHEMICAL:			
Urea, per cent	.80%	1.10%	.45%
Albumin	Trace	0	0
Sugar	0	0	0
Acetone	Trace	Present	Present
Diacetic acid	0	0	0
Blood pigment	0	0	0
Indican	None	None	None
Diazo reaction	—	—	—
MICROSCOPICAL:			
Casts			
Granular		0	Few
Hyaline	Few	0	
Cylindroids	Few	Many	Few
Mucus	0	0	0
Amorphous deposit	0	Phosphates	Abundant
Red blood cells	0	0	0
Leucocytes	0	0	Occasional
Crystals			Few phosphates
Epithelial cells	Few	Few round, many small	Many small

"This case is not so good, but notice that the albumin has disappeared. There seems to have been some trouble between the physician and the patient because the patient failed to obey instructions and did not take the oxidized oil regularly after she commenced to feel better. Furthermore, we understand that the case is one of old standing whereas this treatment has been for only three months."

Urine Comparisons

Patient No. 6

	At start 6–21–12	8–1–12	9–9–12	10–21–12
Physical Examination:				
Volume, 24 hrs. c.c.	720	1,660	1,200	1,680
Solids, 24 hrs. grams		39	34	27
Appearance	Slightly turbid	Very turbid	Turbid	Turbid
Sediment	Slight	Slight	Slight	Slight
Reaction	Acid	Neutral	Slightly acid	Acid
Sp. Gr. at 60° F.	1.019	1.009	1.013	1.008
Chemical:				
Urea, per cent	1.30%	1.05%	.70%	.30%
Albumin	Trace	Trace	0	0
Sugar	0	0	0	0
Acetone	Present	Present	Present	Present
Diacetic acid	0	0	0	0
Indican	0	0	0	0
Blood pigment	0	0	0	0
Diazo reaction	Negative	Negative	Negative	Negative
Microscopical:				
Casts				
Granular		Few	Few	Few
Hyaline	Few			
Cylindroids	0	Occasional	0	Numerous
Mucus	Few threads	None	0	0
Amorphous deposit		Phosphates	0	0
Red blood cells	0	0	0	0
Leucocytes	Occasional	0	0	0
Crystals		Phosphates	Phosphates	0
Epithelial cells	Many squamous	Round and many squamous	Round and many squamous	Occasional round

"The condition of this patient was discovered when making a general examination to discover cause of indisposition. Note in this case, and generally throughout the cases, that when the quantity of urine is subnormal, the treatment seems to raise it strongly toward the normal. In this case the albumin completely disappears as do the leucocytes, and aside from the casts, there are very slight evidences left of derangement, although the treatment has been for only four months."

Urine Comparisons

Patient No. 7

	At start 3-8-12	3-29-12	4-30-12	P.T.L. 6-6-12	P.T.L. 9-18-12	P.T.L. 12-24-12
Physical Examination:						
Volume, 24 hrs. c.c.				Not given	Not given	Not given
Solids, 24 hrs. grams					Not given	Not given
Appearance	Clear			Slightly turbid	Clear	Clear
Sediment				Small	0	0
Reaction		Acid	Acid	Slightly acid	Slightly acid	Slightly acid
Sp. Gr. at 60° F.		1.015	1.016	1.017	1.017	1.015
Chemical:						
Urea, per cent	1.20%			.60%	.40%	.90%
Albumin	Heavy trace	0	0	Trace	0	0
Sugar		0	0	0	0	0
Acetone				Present	Present	Present
Diacetic acid				0	0	0
Indican	Very heavy	0	Slight	Present	Present	Present
Blood pigment	Heavy trace			0	0	0
Diazo reaction				—	—	—
Microscopical:						
Casts						
Granular	Few			Few	0	0
Hyaline	Many				0	0
Cylindroids	Many			Few	Occasional	0
Mucus				Present	0	Few threads
Amorphous deposit				Phosphates	0	0
Red blood cells					0	0
Leucocytes				Present	0	0
Crystals						0
Epithelial cells				Round	Few round	Few round

"With the exception of patient No. 4, this patient covers a much longer period of treatment than any other. The first three analyses were made outside of our equipment and their incompleteness does not seem to reflect credit on the analyst. It has been analyses such as these that have caused us to arrange a special department in the Pittsburgh Testing Laboratory in order to have the work thoroughly done.

"This patient was put on a diet which he has certainly construed liberally. He never stopped smoking and continued to drink, but only rarely. In fact, the truth is, that within two months of commencing the treatment he felt so much better that he gave himself considerable license and returned to his vocation, working hard and continually. This case is startling when we connect with it all that the words 'Bright's disease' mean. The albumin, the blood, the casts and the leucocytes have all disappeared. The man is apparently well. It is now over four years since we took this case and the man is living and in normal health."

URINE COMPARISONS

Patient No. 8

	At start 7-17-12	10-2-12	1-8-13	5-5-13
PHYSICAL EXAMINATION:				
Volume, 24 hrs. c.c.	1,020	1,620	1,350	1,620
Solids, 24 hrs. grams	62	53	38	64
Appearance	Cloudy	Turbid	Turbid	Slightly turbid
Sediment	Slight	Heavy	Slight	None
Reaction	Slightly acid	Neutral	Neutral	Acid
Sp. Gr. at 60° F.	1.026	1.014	1.012	1.017
CHEMICAL:				
Urea, per cent	2.65%	1.00%	1.55%	1.05%
Albumin	.28%	.24%	.23%	.16%
Sugar	0	0	0	0
Acetone	Present	Present	Present	Present
Diacetic acid	0	0	0	0
Indican		None	Present	Present
Blood pigment	Present	None	None	None
Diazo reaction	Negative	Negative	Negative	Positive
MICROSCOPICAL:				
Casts				
Granular	Present		Few	Very few
Hyaline	Present	Many	Many	Few
Cylindroids		Few	Occasional	Few
Mucus	Present	None	None	Few threads
Amorphous deposit	Urates	Phosphates Urates	Urates	Phosphates Urates
Red blood cells		0	0	0
Leucocytes	Numerous	Few	None	Few
Crystals		Urates	Many phosphates	None
Epithelial cells	Round present	Many round	Many round	Few round

"Here we have, in a young man, a case of three years' standing and one that has had the care of several physicians. He has always been on a diet but with no evidence of real improvement all this time.

"He came to us in July, 1912, through his physician and we undertook to do what we could for him. Taking the man's own repeated statements and his looks, he certainly is much improved, stronger, free from headaches, able to work hard and having a good time instead of his former rigid living and poor health.

"Is he cured? No. Will we cure this case of old standing? We do not know. As we will gain nothing by discussing it let us discuss the analyses.

"Notice that the scanty quantity of urine becomes normal; that the very high quantity of urea changes before the oxygen; that the blood pigment disappears. The albumin is stubborn but little by little it is lowered until the last analysis, when it commences to disappear with increased rapidity. At this same time radical changes are apparent in the casts—the granular casts have become very few; the hyaline ones have changed from many to few.

"The real fact is that from the beginning of the treatment the changes have been many and all tending to a normal condition and at the last increase in both force and rapidity.

"This case was taken by us in 1912; the patient has moved away from Pittsburgh but he is not dead and we have a letter from him within the month speaking of the very satisfactory condition of his health. From 1912 to 1916 and LIVING! Look at his analyses again."

With the cases before us, carefully studied and their importance realized, let us require an answer to this question, for in it lies the pith of the matter.

IT IS NINE YEARS SINCE WE COMMENCED THESE CASES AND EIGHT YEARS SINCE WE DISCHARGED THEM. WHAT HAS BECOME OF THESE PEOPLE?

The first four are living and in normal health, the fifth (Patient No. 8) is dead.

Patients No. 4, No. 5, and No. 6 are to the writer's knowledge living and well.

Patient No. 7, whose condition was diagnosed by three separate physicians to be surely fatal within six months from the start of his trouble, was an officer in one of our well-known corporations in March, 1912; within two or three months he returned to his work and in 1921 is still that officer in that same corporation.

We stated that Patient No. 8 is dead; his history is very interesting for our purposes. He moved away from Pittsburgh and in a reasonable time we stopped the treatment. When the war came to us in 1917 this young man entered the service and passed a perfect medical examination. He wished to change to another branch of the service and in doing so had to come up for a second medical examination, which he passed successfully.

This same young man was sent to France and served throughout the war, at the end of which he returned; at this time he visited the writer and said he was in perfect health and he looked it.

In the early spring of 1920 we had letters from him in which he spoke of being in perfect health; a short time afterwards we heard of his death, said to have been from pneumonia. As his home was then several thousand miles away we know none of the details.

Have we seen the power of intensified oxygen save life again and from an entirely different and a very fatal disease?

Have we seen the record prolonged for such a time as to prove the cure as permanent?

The power of oxygen is not yet demonstrated; we have only commenced.

It seems almost ridiculous to make such a statement after showing the cure of two notoriously fatal diseases—tuberculosis and Bright's disease—but let the reader be the judge for surely by this time he realizes that an unheard of thing is passing before his eyes, *something that may mean life to him, or a member of his family, if it is properly developed, or death may come to him before his natural time if it is neglected.*

We deal with the quantity of the oxidized oils to be used in different diseases in another chapter. Here we wish to state that Bright's disease requires the prolonged use of small doses, generally twenty drops three times a day; in some cases this quantity can be doubled, in others it must be decreased. The patient should take all he can without affecting his appetite and without tasting it by regurgitation for more than an hour or two after taking it. It is generally given after eating.

ABSCESSES

Doctor S. Danzer, No. 660 Willoughby Avenue, Brooklyn, New York, came to us in the late summer or early fall of 1917 and offered his services in aid of our work.

We asked him particularly to take up the questions involved in the treatment of abscesses by means of oxygen.

Doctor Danzer did a very brilliant piece of work and one which we take great pleasure in acknowledging and here placing on record.

In addition to the work shown by his cases he was also the first to demonstrate the fact that much heavier doses than we had yet attained could be safely used and that the dose used should be based upon the character of the germ to be met and the extent of the infection, which was a very reasonable proposition and later guided Doctor Ellis to his attainment of 1080 drops in twenty-four hours and Doctor Sanger in his successful treatment of the case of G——— G——— (tuberculosis of the larynx).

It was very unfortunate that we so soon lost the benefit of Doctor Danzer's services.

He enlisted in the medical service during the war, the government refusing to allow him to continue this work, experienced a very severe illness while in the service, since which time we have lost track of him.

We now place before the reader a number of cases of abscesses and certain correspondence on the questions involved, the cases being arranged in succession according to their dates.

In medicine the general proposition in the treatment of abscesses seems to be based on the corollary "where pus evacuate"—in plain words, in the case of an abscess use the knife as we know no other sure way of curing it.

Please note that the knife was not used in any of these cases after they came into Doctor Danzer's hands! The only case in which the knife was used was that of J——— B———, the fourth case who was operated on before he came into Doctor Danzer's hands; in this case the other abscesses which were forming disappeared before the oxygen.

The last case, Mrs. I——— B———, large abscess of the breast, ruptured, which would probably not have occurred if we had then known how freely we could use the oxygen and if the treatment had not been discontinued.

We have three other cases showing the very definite return of the disease when the oxygen treatment was discontinued before cure was accomplished and the facts surrounding the other three cases give great significance to the fact that this abscess broke within twenty-four hours after the capsules were discontinued.

DIAGNOSIS

Name: I——— D———. *Date:* November 15, 1917.

Address: Brooklyn, N. Y. *Occupation:* Clothing Manufacturer.

Nationality: American Jew. *Social Condition:* Good.

Age: 42 years. *Height:* 5 ft. 11 in. *Weight:* 165 pounds.

Temperature: 98°. *Pulse:* 68. *Respiration:* 20. *Blood Pressure:* $\frac{115}{80}$

Present History: For the past three days experienced pain in the left arm pit, which has become progressively worse. Movement of the arm aggravates the pain. Examination reveals an abscess in the left axilla. The pus shines through the thin layer of overlying skin.

Urine Specific Gravity: 1.018. *Sugar:* Negative. *Albumin:* Negative.
Diagnosis: Abscess in axilla.

(Signed) S. Danzer, M.D.,
660 Willoughby Avenue,
Brooklyn, New York.

TREATMENT COMMENCED NOV. 15, 1917.

Doses of Ozonate Used.	Reports.
Nov. 15—60 drops 4 times daily.	
	Nov. 17—Patient experiences relief.
Nov. 19—60 drops 3 times daily.	Nov. 19—Abscess smaller, skin wrinkled because of disappearance of pus.
Nov. 22—45 drops 3 times daily.	
	Nov. 26—Cured although skin was not broken. (Signed) S. Danzer, M.D.

Diagnosis

Name: I———— K————. *Date:* November 23, 1917.
Address: Brooklyn, N. Y. *Occupation:* Housewife.
Nationality: Russian Jewess. *Social Condition:* Fair.
Age: 55 years. *Height:* 5 ft. 5 in. *Weight:* 160 pounds.
Temperature: 98.2°. *Pulse:* 92. *Respiration:* 19. *Blood Pressure:* 220
120

Present History: Two days ago, while manicuring her toe-nails, she cut her big toe. This has become infected and at present a fluctuating mass is evident. For the past 10 years, this patient has had an empyema of the frontal sinuses which has never been treated. For the past 2 years, she has had severe attacks of Angina Pectoris.

Urine Specific Gravity: 1.023. *Sugar:* Negative. *Albumin:* Negative.
Microscopical Examination: Shows numerous pus cells and hyala-granular casts.
Diagnosis: Diffuse Pyclo Nephritis and Arteriosclerosis. (Especially involving the Coronary arteries, which accounts for her Angina Pectoral attacks.) Chronic Frontal Sinusitis. Abscess of the big toe.

(Signed) S. Danzer, M.D.,
660 Willoughby Avenue,
Brooklyn, New York.

TREATMENT COMMENCED NOV. 23, 1917.

DOSES OF OZONATE USED.	REPORTS.
Nov. 23—45 drops 3 times daily.	
Nov. 24—60 drops 3 times daily.	
Nov. 26—60 drops 4 times daily.	
	Nov. 27—Abscess disappearing.
	Nov. 29—Abscess healed although not incised.
Dec. 1—45 drops 3 times daily.	
	Jan. 5—Feels better generally. (Signed) S. DANZER, M.D.

DIAGNOSIS

Name: I——— S———. *Date:* November 26, 1917.

Address: New York, N. Y. *Occupation:* Corsetierre.

Nationality: German. *Social Condition:* Good.

Age: 32 years. *Height:* 5 ft. 4½ in. *Weight:* 163 pounds.

Temperature: 98°. *Pulse:* 80. *Respiration:* 18. *Blood Pressure:* $\frac{120}{85}$

Present History: For the past 2 weeks he has been troubled with boils which would break out on the back of his neck and face. When he came under observation one boil was discharging pus and another had not yet opened.

Urine Specific Gravity: 1.016. *Sugar:* Negative. *Albumin:* Negative.

Diagnosis: Furunculosis.

(Signed) S. DANZER, M.D.,
660 Willoughby Avenue,
Brooklyn, N. Y.

TREATMENT COMMENCED NOV. 26, 1917.

DOSES OF OZONATE USED.	REPORTS.
Nov. 26—45 drops 3 times daily.	
Nov. 28—60 drops 3 times daily.	Nov. 28—Purulent discharge is less.
	Nov. 30—No more discharge.
Dec. 1—45 drops 4 times daily.	
Dec. 5—30 drops 3 times daily.	Dec. 5—Abscess healed. The other abscess that had not broken out, "Just melted away."
	Dec. 25—His skin is perfectly clear. Feels fine. (Signed) S. DANZER, M.D.

DIAGNOSIS

Name: J———— B————. *Date:* December 5th, 1917.
Address: Brooklyn, N. Y. *Occupation:* Mechanic.
Nationality: Austrian. *Social Condition:* Fair.
Age: 36 years. *Height:* 5 ft. 6 in. *Weight:* 145 pounds.
Temperature: 98.6°. *Pulse:* 64. *Respiration:* 18. *Blood Pressure:* 125
85

Present History: One week ago a boil, on the back of his neck, was incised. Healing was very slow. He also felt that more boils were coming out. I disinfected the wound, ordered alcohol dressings and gave Ozonate internally.

Urine Specific Gravity: 1.020. *Sugar:* Negative. *Albumin:* Negative.
Diagnosis: Carbuncle.

(Signed) S. Danzer, M.D.,
660 Willoughby Avenue,
Brooklyn, New York.

TREATMENT COMMENCED DEC. 5, 1917.

Doses of Ozonate Used.	Reports.
Dec. 5—45 drops 3 times daily.	
Dec. 8—60 drops 3 times daily.	
	Dec. 12—The carbuncle has stopped discharging. No others have broken out.
Dec. 15—45 drops 3 times daily.	
	Dec. 20—Completely healed. (Signed) S. Danzer, M.D.

DIAGNOSIS

Name: Mrs. M———— P————. *Date:* December 27, 1917.
Address: Brooklyn, N. Y. *Occupation:* Housewife.
Nationality: Polish. *Social Condition:* Fair.
Age: 40 years. *Height:* 5 ft. 4 in. *Weight:* 143 pounds.
Temperature: 99°. *Pulse:* 72. *Respiration:* 18. *Blood Pressure:* 120
83

Present History: Since yesterday has experienced pain on walking. Feels a little swelling on sole of foot. One week ago, an abscess in adjacent spot was incised.

Urine Specific Gravity: 1.015. *Sugar:* Negative. *Albumin:* Negative.
Diagnosis: Plantar abscess.

(Signed) S. Danzer, M.D.,
660 Willoughby Avenue,
Brooklyn, New York.

TREATMENT COMMENCED DEC. 27, 1917.

DOSES OF OZONATE USED.	REPORTS.
Dec. 27—45 drops 3 times daily.	
Dec. 28—60 drops 4 times daily.	Dec. 28—Feeling of tension in foot is relieved.
Dec. 29—60 drops 4 times daily.	
Dec. 30—30 drops 3 times daily and until treatment stopped.	
	Jan. 1—Abscess is completely healed, although skin was unbroken. (Signed) S. DANZER, M.D.

DIAGNOSIS

Name: I——— B———. *Date:* January 3, 1918.

Address: Brooklyn, N. Y. *Occupation:* Housewife.

Nationality: Russian. *Social Condition:* Poor.

Age: 42 years. *Height:* 5 ft. 4 in. *Weight:* 149 pounds.

Temperature: 99°. *Pulse:* 88. *Respiration:* 18. *Blood Pressure:* 115
80

Present History: For the past five days experienced pain and induration of the left breast near nipple. There is "caking" of the breast and marked tenderness near the nipple and a lymphangitis extending up towards the left axilla

Urine Specific Gravity: 1.015. *Sugar:* Negative. *Albumin:* Negative

Diagnosis: Breast abscess (left).

(Signed) S. DANZER, M.D.,
660 Willoughby Avenue,
Brooklyn, New York.

TREATMENT COMMENCED JAN. 3, 1918.

Doses of Ozonate Used.	Reports.
Jan. 3—45 drops 3 times daily.	
Jan. 4—60 drops 4 times daily.	Jan. 4—Increase of swelling and pain.
	Jan. 5—Abscess coming to the surface.
	Jan. 6—Large subcutaneous bleb size of plum near the nipple.
Jan. 7—60 drops every three hours.	
Jan. 9—No capsules taken, both because of the fact that those that I had were too old, also because I was curious to learn whether suspension of the treatment would hinder the rapid progress of the healing.	
	Jan. 10—Spontaneous rupture of bleb and discharge of pus.
Jan. 15—45 drops 3 times daily.	Jan. 15—Although no aseptic nor antiseptic precautions are taken it is healing nicely.
Jan. 17—Stopped taking capsules; patient is not very intelligent and cannot be made to take the capsules when the wound is healing so nicely and when she has no pain.	
	Jan. 19—Wound is granulating nicely. (Signed) S. Danzer, M.D.

"January 16, 1918.

"*My dear Mr. Todd:—*

"This is the first chance that I have had, to write for the past week. To begin with, I want to thank you for your kind and thoughtful letter in regard to the questionaire.

"In reply to your letter of the 12th, I wish to say that it is certainly encouraging. What you have said about the treatment of large abscesses certainly has come true. My last case, which was one of breast abscess, about the size of a hen's egg, would not disappear under the treatment. This is not a fair case, since the patient discontinued the oxidized oil for two days, during which time the abscess spontaneously ruptured.

"This was a very instructive case, however. It began with marked tenderness and 'caking' of the left breast. Wet dressings were applied externally and Ozonate was administered. The swelling and tenderness soon increased and there was marked inflammatory edema of the breast. There was some evidence of a lymphangitis of the breast but the axillary lymph nodes which drain the breast were not enlarged or tender. This showed that the infection was not spreading and I had no fear that the latter would reach the blood stream. I therefore kept on with the Ozonate, and did nothing else. Day by day the inflammatory edema and the redness and tenderness subsided, but a soft, fluctuating mass appeared (the abscess came to the surface). The skin over this area was very thin and one could see that the contents of the abscess were thin and watery, not like pus (which is usually thick and creamy). What was particularly interesting was that it did not look acute and angry, but reminded me rather of the 'fire that is dying out.'

"At this time the patient complained of the taste of the oxidized oil, and as the capsules that were in my possession were over two weeks old, I did not persuade her to take them.

"I also wanted to see whether a break in the treatment would hinder the progress of the cure. On the day after the capsules were stopped the abscess spontaneously ruptured. Soon the capsules were again resumed, the wound is healing very quickly and nicely.

"This case and the five other cases of abscess have led me to infer that the body develops an 'acquired immunity' against the invading organism.

"The question that this leads up to is, what does this immunity consist of? Is it the amboceptor, the opsonin, or the agglutinin that is increased by the oxygen treatment? In order to determine this one would have to test the blood before, during and after the treatment.

"The amboceptor is tested for by the complement fixation method, opsonic index is determined by Wright's method, and the agglutinins may be detected by the agglutinating reaction between the serum and the organism in question.

"It seems to me that this would be very essential in explaining the rationale of the oxygen treatment.

"If possible, I shall try to work these problems out. But this will have to be done on hospital patients and with the help of a bacteriologist.

"Very sincerely yours,
"(Signed) S. DANZER, M.D."

"January 25, 1918.

"*My dear Doctor Danzer:*

"Replying to yours of January 16th in regard to the case of breast abscess.

"I thank you for the information you have given me in regard to this case and request that you send me the diagnosis sheet and reports as soon as possible.

"You say in your letter that I was right when I stated to you that it would be difficult or impossible to cure abscesses by the oxygen treatment if you got the case after there was a large accumulation of pus.

"Possibly I went a little too far in this statement to you and I wish to take this opportunity of explaining my position a little more clearly.

"In this case of breast abscess I think that you have made very definite headway and I am inclined to think that if the abscess had not been so close to the surface as to cause it to break of itself, you would very probably have cured it in the end, and your report certainly shows that you very definitely destroyed its virulence.

"The point that I wish to make clear in your mind is that I have no method of judging how large an abscess you can cure; experience will only be able to show us this and it may well vary in different cases, but there are certainly cases where there is a very large pus deposit which it would seem to me that it would be unreasonable to expect to effect a cure with the small amounts of oxygen that we can use at the present time, but the use of as heavy a dose as possible and the protracted use of the oxygen will go, I believe, much further in such cases than we have yet been able to go.

"Yours very truly,
"(Signed) JAMES TODD"

The reader has now had an opportunity of studying the effects of oxygen on a number of superficial abscesses, that is abscesses on the surface of the body.

Superficial abscesses were purposely chosen for this demonstration that there might be no question as to the reliability of the diagnosis.

One may say that a carbuncle, while very painful, yet is hardly serious enough to include in the class of very fatal diseases we are writing of, but pause to realize the real significance of the matter. The oxygen passes into the body through the blood, which in its turn goes to every part of the body and so can reach an abscess on the brain—the liver—the appendix, *just as quickly, just as thoroughly as it can reach the abscess on the foot or under the arm.*

It would hardly be reasonable to claim that in all these cases we had met one and the same germ and so place a limit on the work; common sense would say that we probably met at least several different germs.

NOTE: It seems proper to state that all the correspondence used in this book consists of *dictated* letters; neither party knowing at the time that they would be published. Some slight errors of expression occur but I have not felt at liberty to edit them.—J. T.

The writer feels that there is not much to be gained by undertaking to dwell at length upon these cases, for their lesson is so plain; it is not the writer who cured these abscesses without resorting to the knife; it is the power of intensified oxygen; ***never forget this, we disappear; it remains for permanent use.***

The lure of the problem, its wonderful scope and possibilities are strong upon the intelligent, thinking mind; try for yourself to determine where it will, or will not, lead.

It has held the writer through disappointments, through humiliations, through strife and danger for well nigh twenty years and it always comes back to an old, old saying

"The chords of the lute are heavy
With the weight of the wonder of things."

Perhaps the best is still to come, we have still more definite demonstrations to give, yet, again, the best may lie far outside the scope of our present efforts.

PNEUMONIA AND INFLUENZA-PNEUMONIA

With as little comment as possible we will now present a number of cases of pneumonia and influenza-pneumonia; they constitute the largest single collection of cases that we have and come under the care of three different physicians.

The cases are the direct result of the writer's appeal to the physicians to open the pneumonia field which he did upon theoretical grounds; the practical facts well sustain his views.

Perhaps the reader is not familiar with the fact that the late epidemic of influenza was almost certainly fatal when it attacked the lungs; this fact should be always kept in mind in studying these cases.

None of the cases given were among what we might speak of as the sheltered class who could have every care that science and money could give. The most of them were foreign laborers from a coal works in western Pennsylvania, with the school-house converted into a temporary hospital and the teachers used as nurses but, fortunately, in the care of a physician of rare common sense and with a training in the use of the oxygen that had convinced him that if he did his part the oxygen would not fail him.

There are seventeen of Doctor Ellis's cases, sixteen of which are placed together, they show a desperate condition of affairs, a man who was able to face the emergency and an undeniable demonstration of the oxygen power.

A serious complication in many influenza cases was the condition of the digestive organs; the patients could not retain the oxidized oil in their stomachs. Had Doctor Ellis been unable to control this symptom we could not have succeeded. When it arose, instead of ceasing the treatment, he commenced to give a little whiskey with the capsules. This controlled the difficulty and has given us very valuable information of a practical character, which we have used with marked success and should always be kept in mind in administering the treatment.

We wish particularly to draw the reader's attention to the quantity of the oxidized oils used in these cases as they seem to clearly establish the fact that sixty drops of the oxidized cod liver oil (called by us Ozonate and containing about eight and one-half per cent. of intensified oxygen in chemical combination with the oil) taken every two hours, is necessary to speedily cure serious cases.

Light to medium cases can be controlled with less.

Among these cases are two children of four and six years of age; they were of course given less.

This question is best studied through the last sixteen cases as we there bring it out on drawings.

We would also call attention to the comparatively short time elapsing between the giving of the oxygen and the discharging of the patient; many of these cases were discharged much under two weeks from when the treatment commenced. The action of the oxygen is so quick and sure that not only the danger but also the tedious illness is eliminated.

We think we have now said enough to attract attention to the major features of the demonstration but have purposely omitted many valuable details feeling that they are self evident.

THE CASE OF J—— W——

This is a case of the aftermath of pneumonia, the resulting toxines which are so often hard to eliminate and sometimes fatal. The case is given without comment.

COMMITTEE
DIAGNOSIS BLANK

Name: J—— W——. *Date:* February 26th, 1918.
Address: Sewickley, Penna. *Occupation:* Railroad Engineer.
Nationality: American. *Social Condition:* Married.
Age: 35½ years. *Height:* 6 ft. 1½ in. *Weight:* 130 pounds (within eight months had weighed 172 pounds).
Temperature: 99°. *Pulse:* 76. *Respiration:* 22. *Blood Pressure:* 140.

Family History: One sister died of tuberculosis. Mother has chronic bronchitis. One brother had cough before his death that was probably tubercular in nature, but was killed in an accident.

Alcoholism: No. *Drug Addiction:* No. *Tobacco:* Moderate.

All Previous Illness: Has had a cough for twenty years. Typhoid twenty years ago.

Full History of Present Trouble: On January 31st was stricken while at work with a violent chill, immediately followed by chest soreness, violent cough and high fever. Came home to bed and when I was called that same evening, patient had a temperature of 104°, pulse 120, and respiration of 42. The entire middle and lower lobes of the right lung were consolidated. The temperature and pulse rate fluctuated from 101° to 104° temperature and 102 to 120 pulse with respiratory rates from 28 to 42 for ten days. After that there was a gradual decline, but the disease ended by lysis. The temperature has been normal for 12 days, but a cough persists and the patient does not gain in weight.

How Long Since Present Illness Began: Twenty-six days.

Previous Treatment: Ordinary treatment with drugs and hot applications to the lung.

Diagnosis: Croupous pneumonia, complicating tubercular diathesis. Pneumonia was of marked toxic type, with low delirium much of the time, and decidedly weakened heart action.

(Signed) E. HARRIS SCATCHARD, M.D.,
302 Beaver Street,
Sewickley, Penna.

REMARKS

On February 26, there is an absence of tubercle bacilli in the oral cavity.

"SEWICKLEY, PENNA.,
"March 6th, 1918.

"MR. JAMES TODD,
"Pittsburgh, Penna.

"*My dear Mr. Todd:—*

"In regard to the case of J——— W———, Sewickley, whom we put on the oxidized oil about the first of March, I want to report that he has already shown a remarkable effect since the administration. His pulse, which would probably be the best index of his toxic symptoms, has fluctuated only a few degrees, from morning until night, the highest being 76 and the lowest 68. His appearance is markedly better, the hectic flush not being as nearly pronounced.

"His weight has gone up steadily, starting at 130 at the time of the first dose, and reaching 135 at the end of eight days.

"He reports that his appetite is in no way impaired, and that he does not taste nor regurgitate the oil.

"Have started him on the second lot of Ozonate and have destroyed the first lot remnants as you requested.

"He is still on sixty drops five times daily.

"Yours very truly,
"(Signed) E. H. SCATCHARD, M.D."

"March 13, 1918.

"MR. JAMES TODD,
"Pittsburgh, Penna.

"*My dear Mr. Todd:—*

"In the case of J——— W———, I am very glad to report that he now weighs 142 pounds, a gain of 12 pounds since starting the Ozonate, a showing in itself which is very remarkable. His toxic symptoms are disappearing very rapidly, especially the erratic pulse, his rate being now practically normal at all hours during the day. He wishes to go to a ranch in Montana in a few weeks for a short stay, and I believe that the change of air and altitude will augment the action of the Ozonate. With your co-operation, we could keep him supplied with the capsules while there, or give him enough for the two weeks' stay. I will keep you further informed.

"Yours very truly,
"(Signed) E. H. SCATCHARD, M.D."

Name: J——— W———. *Date:* March 27, 1918.
Weight: 146½ pounds. *Temperature:* 98°.
Pulse: 90—after walking one-half mile. *Respiration:* 20.
Toxic symptoms improved. No afternoon exacerbation of temperature, nor night sweats.
General Condition: Some pain in right chest, probably neuritic in character. Patient confesses that for two days this week he stopped taking Ozonate in order to see whether his cough would return. Cough returned at once, but practically disappeared upon resumption of dose. This is the cough that has been chronic for over 20 years. He says that he is more free from this cough than at any time in that period.
Dose: Still 60 drops Ozonate five times daily.
Appetite and *Digestion:* Still unimpaired.

(Signed) E. H. SCATCHARD, M.D.

"April 15, 1918.

"Doctor E. H. Scatchard,
"302 Beaver Street,
"Sewickley, Penna.

"*My dear Doctor Scatchard:*

"The case of J——— W———, Sewickley:

"Based upon your statement that this man has gone to Minnesota, I close the record of the case with the papers already in hand and you may consider it off your hands as far as further reports are concerned.

"Yours very truly,
"(Signed) James Todd"

COMMITTEE

Diagnosis Blank

Name: J——— F——— W———. *Date:* April 17, 1918.
Address: Ellsworth, Penna. *Occupation:* School boy.
Nationality: American. *Social Condition:* Good.
Age: 12 years. *Height:*———. *Weight:*———.
Temperature: 102°. *Pulse:* 120. *Respiration:* 48. *Blood Pressure:*———.

All Previous Illness: Chicken pox and measles. Pneumonia three years ago; scarlet fever seven years ago.

Full History of Present Trouble: Became sick on Friday, April 12th, 1918. Saturday, April 13th,—chilly and feverish; bowels regular; vomiting; tongue coated. April 17th—consolidated lower lobe of left lung. Rales in right lung. Scanty bloody expectoration.

How Long Since Present Illness Began: Five days.

Urine Specific Gravity: 1.020. *Albumin:* Slight possible trace. *Sugar:* None.

Diagnosis: Pneumonia.

(Signed) E. M. Ellis, M.D.,
Ellsworth, Penna.

REPORTS

Dates.	Time of Day.	Respiration.	Pulse.	Temperature	Appetite.	Dose: Drops In 24 Hours.	Treatment Started: Apr. 17, 1918. Treatment Stopped: Apr. 26, 1918.
Digest of the Diagnosis.							
4–17–18	2 P.M.	48	120	102.0	Poor	320	Treatment commenced—40 drops Ozonate every three hours. Consolidated lower lobe left lung. Rales in right lung. Scanty bloody expectoration.
Data from the Physician's Reports.							Digest of the Physician's Report.
4–18–18	9 A.M.	40	100	102.0	Poor	480	19 hours have elapsed since the last report. 60 drops Ozonate given every three hours.
4–18–18	3 P.M.	24	110	102.0	Poor	480	6 hours have elapsed since the last report. Dose the same.
4–18–18	7 P.M.	36	100	101.3	Poor	480	4 hours have elapsed since the last report. Dose unchanged.
4–19–18	9 A.M.	36	80	100.8	Poor	480	14 hours have elapsed since the last report. Dose unchanged.
4–19–18	9 P.M.	30	82	100.2	Poor	480	12 hours have elapsed since the last report. Dose unchanged.
4–20–18	9 A.M.	28	90	98.0	Poor	480	12 hours have elapsed since the last report. Dose unchanged.
4–20–18	3 P.M.	24	84	98.0	Poor	480	6 hours have elapsed since the last report. Dose unchanged.
4–21–18	11 A.M.	20	72	97.0	Poor	320	20 hours have elapsed since the last report. 40 drops Ozonate given every three hours.
4–22–18	11 A.M.	18	72	98.0	Improving	320	24 hours since the last report. Dose the same.
4–24–18		18	72	98.2	Good	160	48 hours since last report. 40 drops Ozonate 4 times daily.
4–26–18		18	72	98.2	Good		General condition good. Patient out of bed feeling fine. Treatment discontinued and patient discharged. (Signed) E. M. ELLIS, M.D.

This is Doctor Ellis's first case of pneumonia, taken some months before his sixteen cases.

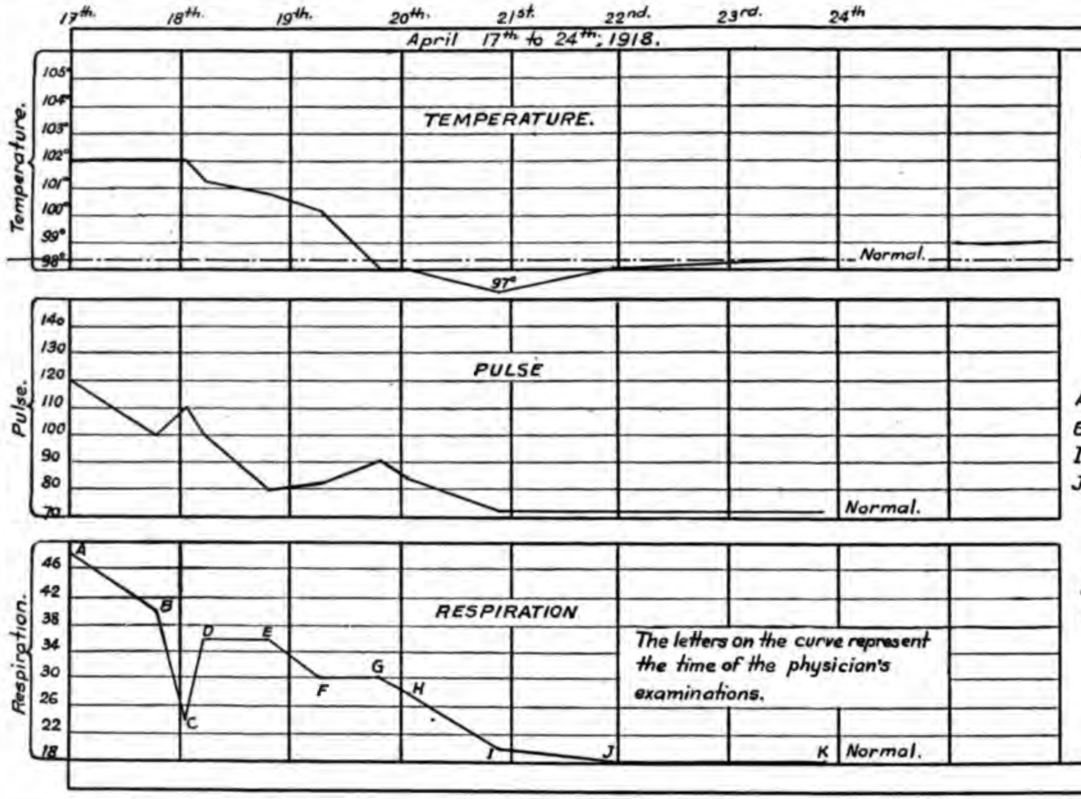
The boy is twelve years old; notice the heavy initial dose—a rapid cycle germ requires it, there being no time in which to build up the dose.

The following morning he increases the dose fifty per cent., then notice how he takes it off towards the last. The germs are gone and the boy would speedily become sick with violent digestive trouble, involving both stomach and bowels, if the heavy dose were continued after the germs were controlled, because the oxygen would have no opposing force to act upon.

The disease breaks in a little over twenty-four hours, the boy is almost normal in three days and discharged in nine days.

Nothing but the Ozonate was used; comment seems unnecessary.

A drawing is inserted to graphically show the changes in the temperature, pulse and respiration.



The letters on the curve represent the time of the physician's examinations.

PNEUMONIA.

Patient J.F.W. File 31.3.

DOSE.

Ozonate used.

A to B – 40 drops every 3 hours.
B to I – 60 " " 3 " .
I to J – 40 " " 3 " .
J to K – 40 " 4 times a day.

Patient discharged well at "K", seven days after treatment commenced.

Jas Todd April, 1918.

THE CASE OF MISS B——— W———

The preceding case, while well defined, was taken early and, we believe, should be considered as a comparatively mild one.

We will now show the oxygen's power face to face with death.

We particularly request that you follow this case by reading the diagnosis and reports both before and after our explanation of them and also by studying thoroughly the drawing used, as the results are undeniable and of very great importance.

COMMITTEE

DIAGNOSIS BLANK

Name: B——— W———. *Date:* April 1, 1918.

Address: Sewickley, Pa. *Occupation:* Housework.

Nationality: American. *Social Condition:* Father oil well rig builder living on small farm.

Age: 18 years. *Height:*———, *Weight:*———.

Temperature: 105.5°. *Pulse:* 150+. *Respiration:* 45/50. *Blood Pressure:*———.

Family History: Negative.

All Previous Illness: Measles, mumps during early childhood. Chorea five or six years ago; symptoms disappeared after 8 months under 3 months' treatment.

Full History of Present Trouble: Whooping cough since Mar. 10–12 with frequent paroxysms becoming unusually severe Mar. 22d to 31st with return of choreal movements. Sitting in chair unable to lie down since Mar. 20th without exciting cough. Loss of appetite, frequent vomiting of food during or after paroxysms of coughing—constipation—varying temperature normal to 101°; pulse 72 to 90; respiration 20 to 30. Became suddenly worse Mar. 31st with chills, pains in right side, difficult breathing, more severe cough. Temperature 104°, pulse 140, respiration 40; cyanotic. Pronounced dullness lower three-quarters right chest; upper and entire left side coarse and mixed rales.

April 1st—temperature 105.5°, respiration 45 to 50, pulse 150 +. Unable to take any but semi-liquid food and vomiting usually following cough partly digested food and freshly taken food. Digestion probably fairly good if permitted. General condition bad. Face, hands, feet cyanotic—cold moist;

body dry. Respiration shallow, muscular twitching choreal movements. Unable to lie down account cough and difficult respiration. Extreme exhaustion from lack of sleep and proper nutrition during 7 to 10 days. Consolidation of three-quarters right lung—upper portion right and entire left lung coarse and mixed rales; blood stained tenacious sputum and semi-fluid yellow sputum.

How Long Since Present Illness Began: Whooping cough March 10; pneumonia March 30th–31st.

Urine Specific Gravity: 1.030. *Albumin:* None. *Sugar:* None.

Previous Treatment: Sedative and symptomatic, and house remedies—honey, thyme, etc. I had not seen patient during 6 days previous to pneumonia onset. Treatment ext. digitalis gr. 1/3 Codine Sulph 1/4 cup—2 repeat 4 to 6 hour intervals 4 doses then one every 3 hours. Potassium citrate 5 gr. in solution with 10 drops Aromat. Ammonia each 2d hour.

Diagnosis: Mixed infection lobar pneumonia and bronchitis complicating whooping cough.

(Signed) WM. R. LYON, M.D.,
East Beaver Street,
Glenfield, Penna.

REMARKS

As patient resides in country, close observation was inconvenient and at times impossible and girl's mother did not keep me informed of condition previous to pneumonia onset.

REPORTS

Dates.	Time of Day.	Respiration.	Pulse.	Temperature	Appetite.	Dose: Drops In 24 Hours.	Treatment Started: Apr. 1, 1918, at 10:00 P.M. Treatment Stopped: Apr. 20, 1918.
Digest of the Diagnosis.							
4-1-18	10:00 P.M.	45 to 50	150+	105.5	None		Unable to take any but semi-liquid food and vomiting usually following cough partly digested food and freshly taken food. General condition bad. Face, hands, feet cyanotic, cold moist; body dry—respiration shallow. Muscular twitching, choreal movements. Unable to lie down account cough and difficult respiration. Extreme exhaustion from lack of sleep and proper nutrition during 7 to 10 days. Consolidation of 3/4 right lung—upper portion right and entire left coarse and mixed rales; blood stained tenacious sputum and semi-fluid yellow sputum. Dose Ozonate 60 drops every 3 hours.
Data from Physician's Reports.							Digest of Physician's Reports.
4-2-18	10:00 A.M.	35	100	102.0		480	Twelve hours later—General condition improved. Able to lie down.
4-3-18	3:00 A.M.	40	140	104.0		720	Seventeen hours later. She omitted capsules from 10:00 A.M. April 2d to 3:30 A.M. April 3d, which seems the cause of the condition. Sputum had increased in quantity and was thinner. Respiration was freer and deeper; bronchial condition better. At 3:30 A.M. Recommenced Ozonate 60 Drops Every 2 to 2½ Hours.
4-3-18	11:30 P.M.	35	90	102.0		720	Twenty-one hours later. General improvement; appearance of rales in solidified portion of lung. Slept 4 hours. This day there were only 3 paroxysms of coughing; before this had been every 2 or 3 hours. Able to take nourishment.
4-4-18	Afternoon	30	100	99.3			General improvement. Patient resting well. Only 2 paroxysms of coughing since 11:30 April 3d. Expectoration free and thinner; bowels moved last two days naturally; appetite increased—asks for food. Sleeping well. Aroused when necessary to give capsules.

Note: The effect caused by the discontinuance of the oxygen treatment. In 17 hours the patient has lost most of the gain and is once more in a dangerous condition. Notice the controlling power of the oxygen as it is resumed. This is saving human life at the same time that it proves the power of oxygen. J. T.

Dates.	Time of Day.	Respiration.	Pulse.	Temperature.	Appetite.	Dose: Drops In 24 Hours.	Treatment Started: Apr. 1, 1918, at 10:00 P.M. Treatment Stopped: Apr. 20, 1918.
4-6-18		26	85	99.0		160	General condition shows marked improvement. Decreased Ozonate to 20 drops every 3 hours.
4-8-18		22	84	Normal			General improvement.
4-10-18		20	74	Normal		100	Choreal movements and muscular twitching ceased on April 4th. Changed dose to one 20 drop capsule every 3 hours, none at night, giving about 5 capsules a day.
4-15-18		20	70	Normal	Good	120	Condition of digestion good. Eats heartily at regular meal times—7-12-6—and calls for food between times. General condition shows substantial improvement. Expectoration white mucus, with infrequent easy cough. Left bronchi clear. Resolution of pneumonic right lung progressing favorably. Taking 40 drops oxidized oil 3 or 4 times daily.
4-20-18		21	72	Normal	Good		Condition of digestion good. Bowel action normal. Gaining strength; expectoration decreasing. (Signed) WM. R. LYON, M.D.

Doctor Lyon had had charge of this case for some ten days before the pneumonia developed; during the night of April first he was sent for and found the patient in a very serious condition.

A temperature of 105.5° F.—Heart action above 150—Respiration 45 to 50.

Doctor Lyon told the writer that after examining the girl he concluded that her lungs were in such a condition that she could not live for twenty-four hours and that he told her parents that, so far as ordinary treatment was concerned, the case was in his opinion hopeless, that he happened to have some of the oxidized oil with him and that if they were willing he would rely upon it as the writer had told him that he wanted it tried on pneumonia and that it should cure if heavily used.

In twelve hours the girl was comparatively safe, the respiration was down ten to fifteen points, the pulse had receded from above one hundred and fifty to one hundred, the temperature had fallen from 105.5° to 102° F.

In twelve hours the oxygen was in absolute control and then came disaster but in a form to prove, as nothing else could prove, the power of oxygen.

The girl's parents stopped giving her the oxidized oil as she said she could not swallow the capsules.

Again the physician is sent for. The germ has struck back as soon as its opponent is taken away and in seventeen hours the patient is almost as desperately ill as before—*respiration forty, pulse one hundred and forty, temperature one hundred and four degrees Fahrenheit.*

Doctor Lyon asserts himself by resuming the treatment with a heavily increased dose.

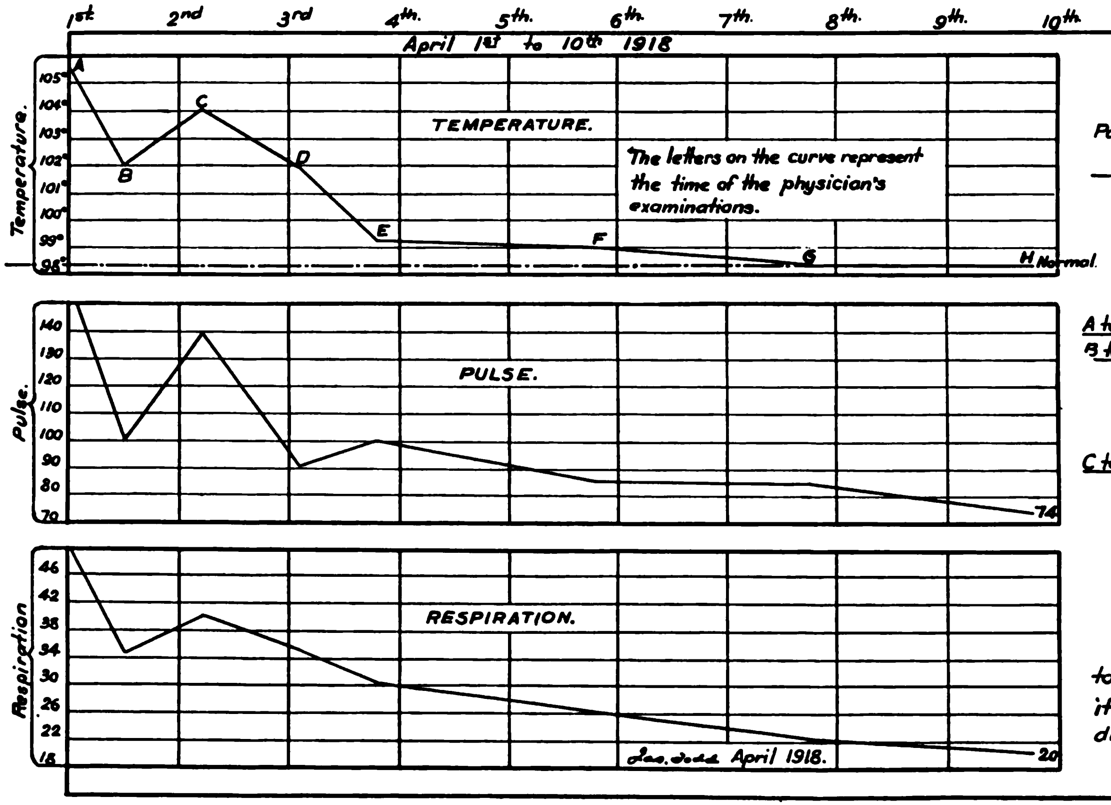
In less than twenty-four hours the oxygen is again in control, the patient safe.

He took the case on April first. On April eighth the patient was practically normal and discharged on April twentieth, the long interval probably being due to weakness as a result of the long illness preceding the pneumonia.

We place on page 77 a drawing bringing out graphically the above points.

If we were to place before you nothing but this one case of pneumonia, it alone would prove the cure by intensified oxygen because of the factors involved—the desperate character of the case and its action when the treatment was broken and later resumed.

Did we go too far when we said that we would place intensified oxygen face to face with death?



PNEUMONIA.

Patient B.W. File 33.1

DOSE.

Ozonate used.

A to B.— 60 drops every 3 hours.
B to C.— None used.
Note the return of the disease during this period.
C to D.— Recommenced the Ozonate. 60 drops every 2 hours.
Note how the oxygen again controls the disease.

Maintained above dose to "F", April 6, 1918 when it was reduced to 20 drops every 3 hours.

We will now take up Doctor Ellis's sixteen cases. These cases, for brevity, will be entirely explained by means of drawings, the reader thus being left wholly to the use of his own judgment.

In this block of sixteen cases we have two deaths, in explanation of which Doctor Ellis stated to the writer that, in justice to the process, he should not have used it on these two cases as they were in a hopeless condition when he received them but that in humanity he could not but try.

The reader's attention is drawn to the fact that these two cases did not reach the hospital until they had been sick for some time.

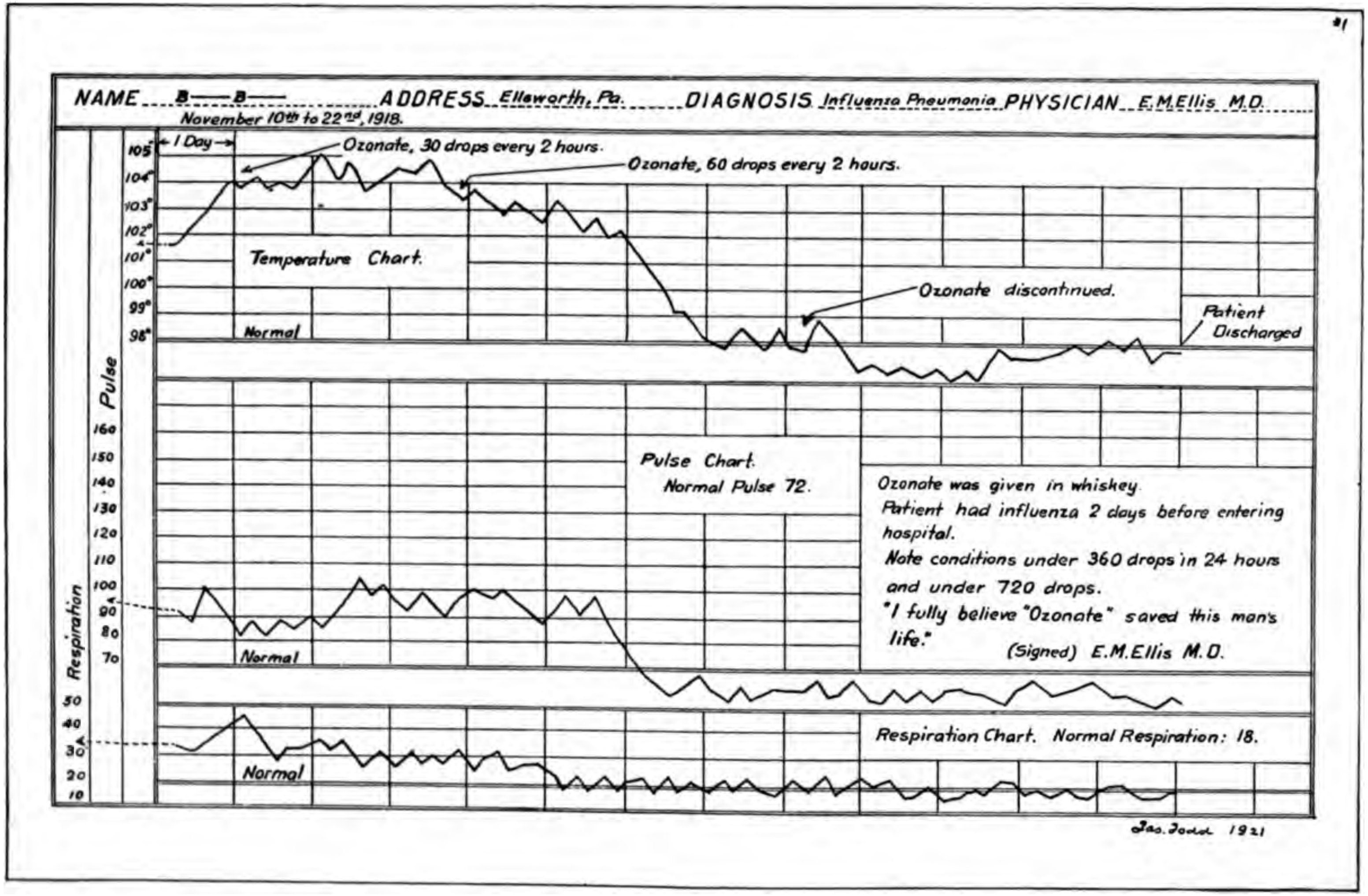
We are obliged to publish all but not to cure all, none can do that.

The cases given are so plain that comment does not seem necessary, so we will leave them in your hands and pass on to still further proofs of the dominance of oxygen.

In talking these cases over with different physicians the writer has noticed that they almost invariably say that they mean nothing to them. They say that pneumonia can do anything; the man almost well dies in a few hours, the one on the verge of death recovers.

The great lesson here held for the physician is that pneumonia *here becomes consistent because it is faced by its natural opponent, oxygen.*

Take the record and try to prove the reverse if you choose.



NAME B—— B—— ADDRESS Ellsworth, Pa. DIAGNOSIS Influenza Pneumonia PHYSICIAN E.M.Ellis M.D.

November 10th to 22nd, 1918.

Ozonate was given in whiskey.

Patient had influenza 2 days before entering hospital.

Note conditions under 360 drops in 24 hours and under 720 drops.

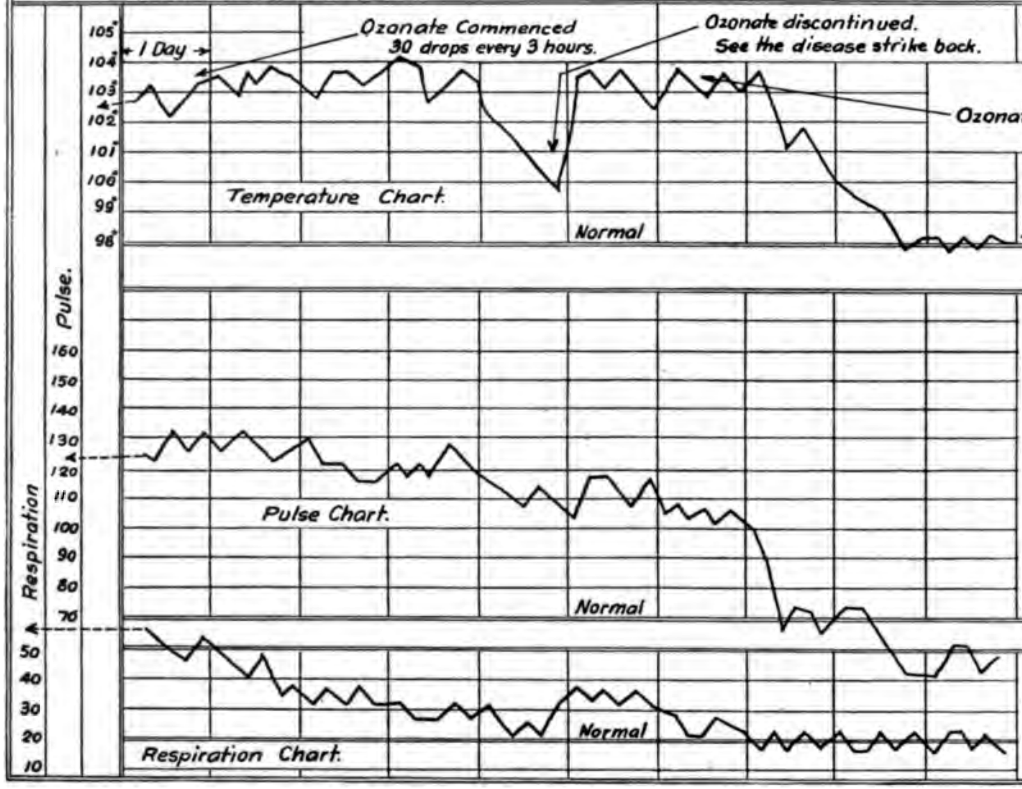
"I fully believe "Ozonate" saved this man's life."

(Signed) E.M.Ellis M.D.

#2

NAME; J—— R—— ADDRESS; Ellsworth, Pa. DIAGNOSIS; Influenza-Pneumonia PHYSICIAN; E.M. Ellis M.D.

November 9th to 18th, 1918.



Ozonate Commenced 30 drops every 3 hours.

Ozonate discontinued. See the disease strike back.

Ozonate resumed. 30 drops every 2 hours.

Patient discharged.

Lapsed Treatment.

Reader please note that this is one of the cases in which the treatment was discontinued.

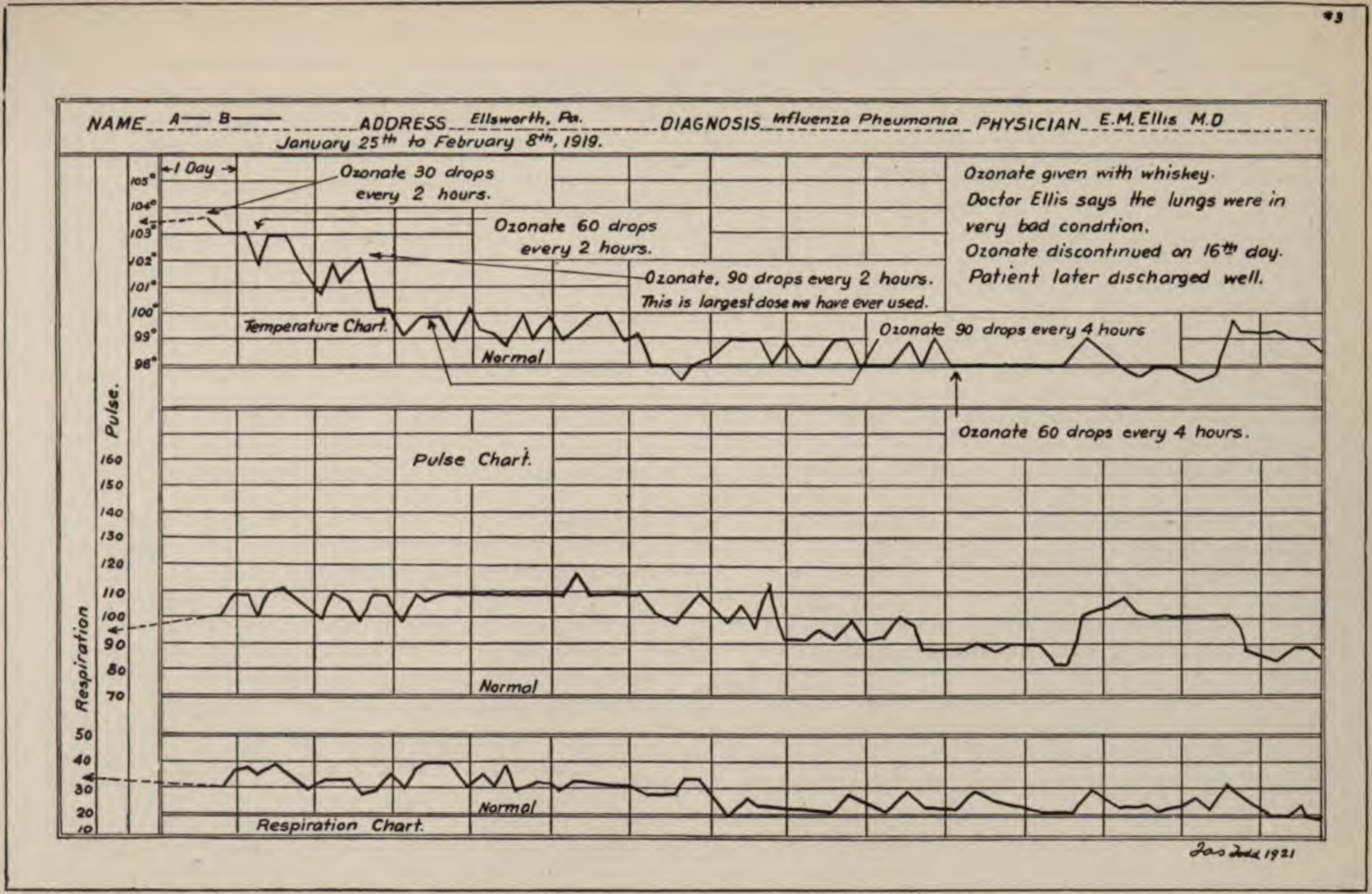
The disease at once returns.

Treatment resumed and the oxygen immediately agäin controlled

The second time the oxygen was used the dose was increased 50% and whiskey used. No further digestive trouble.

Note how the temperature, pulse and respiration rise when oxygen is discontinued and how the oxygen later forces them down

Geo Dodd 1921



NAME A— B— ADDRESS Ellsworth, Pa. DIAGNOSIS Influenza Pheumonia PHYSICIAN E.M. Ellis M.D

January 25th to February 8th, 1919.

Ozonate 30 drops every 2 hours.

Ozonate 60 drops every 2 hours.

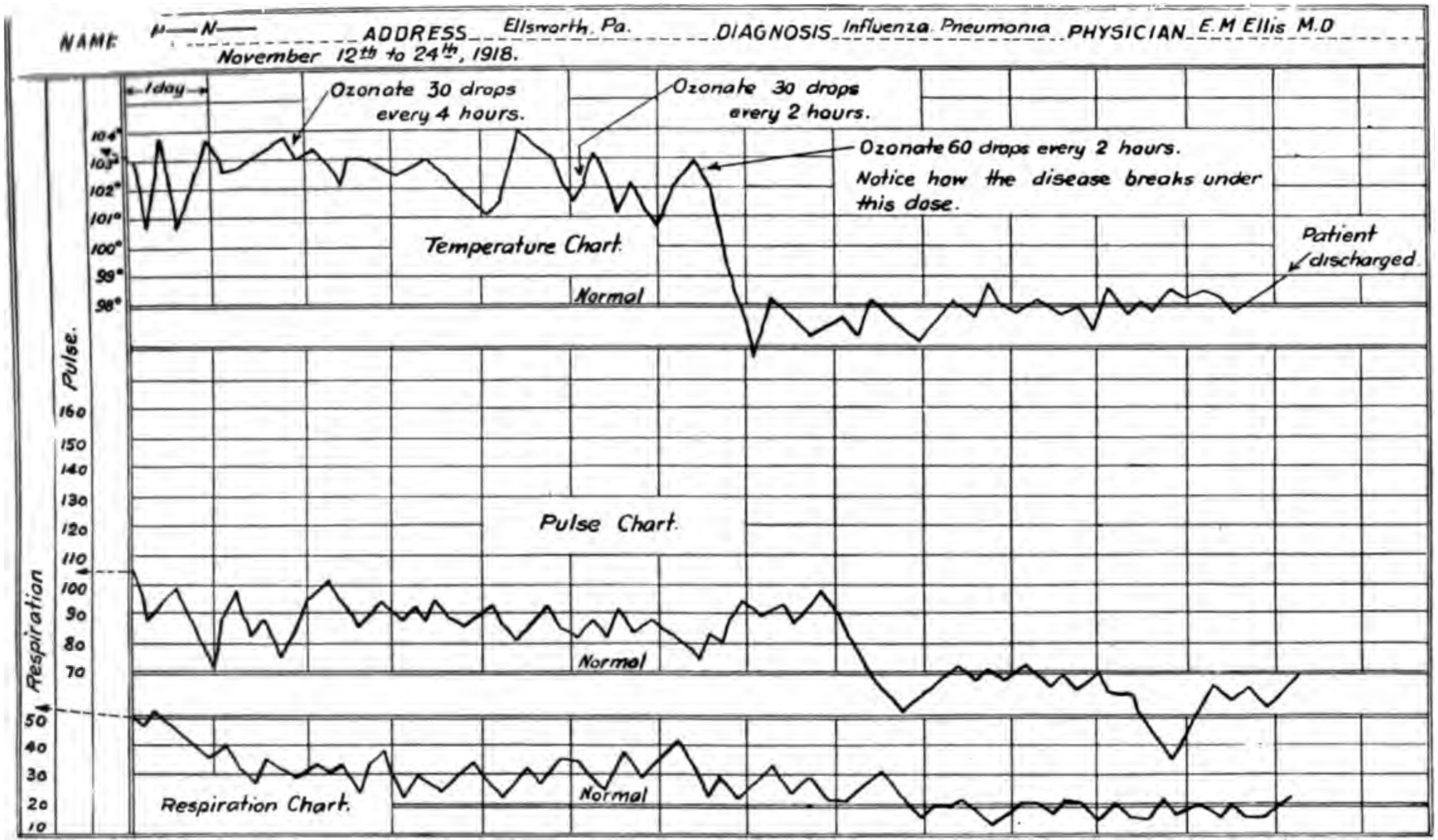
Ozonate, 90 drops every 2 hours. This is largest dose we have ever used.

Ozonate 90 drops every 4 hours

Ozonate 60 drops every 4 hours.

Ozonate given with whiskey.
Doctor Ellis says the lungs were in very bad condition.
Ozonate discontinued on 16th day.
Patient later discharged well.

#4



NAME μ—N— ADDRESS Ellsworth, Pa. DIAGNOSIS Influenza Pneumonia PHYSICIAN E. M. Ellis M.D

November 12th to 24th, 1918.

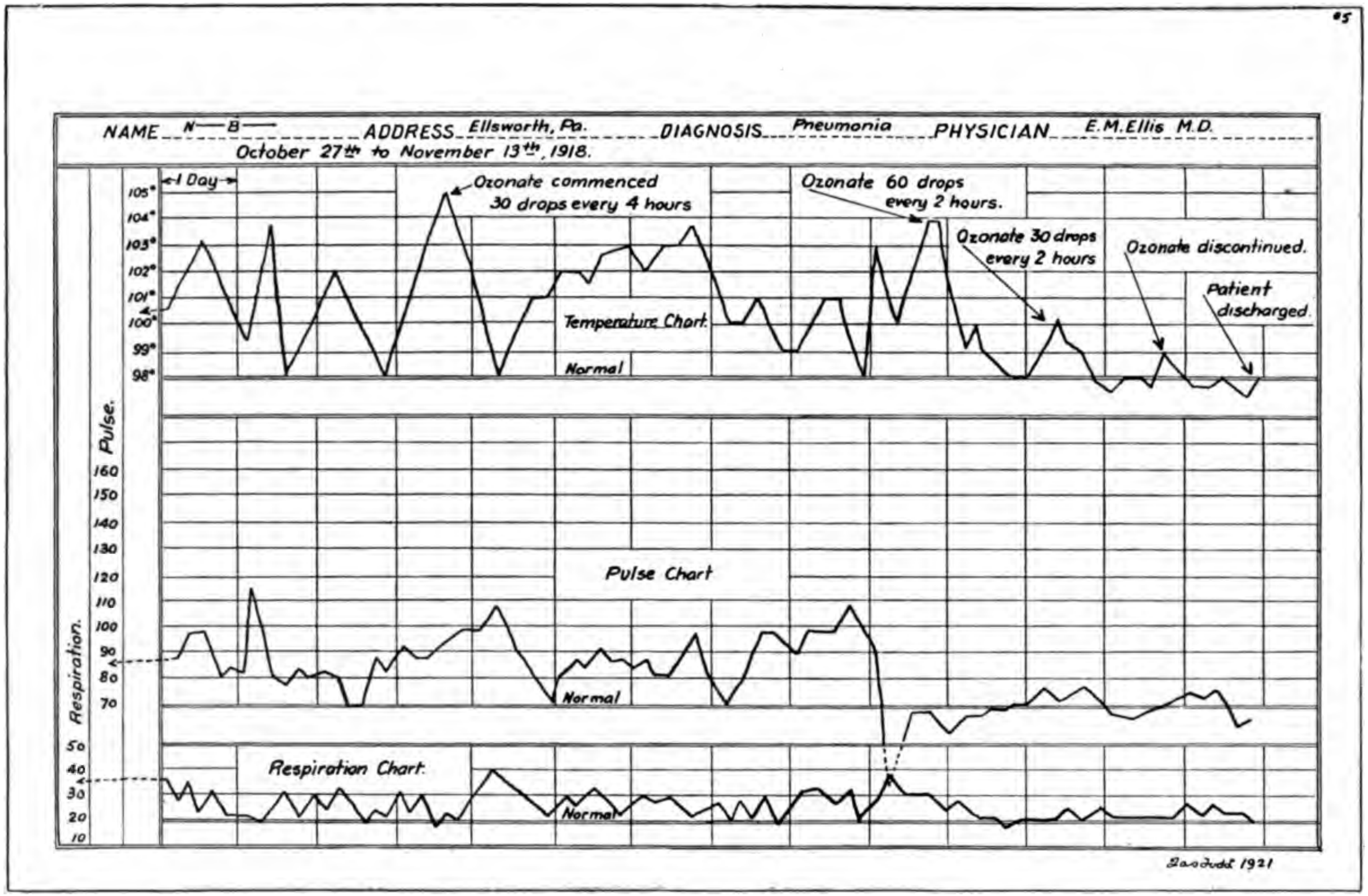
Ozonate 30 drops every 4 hours.

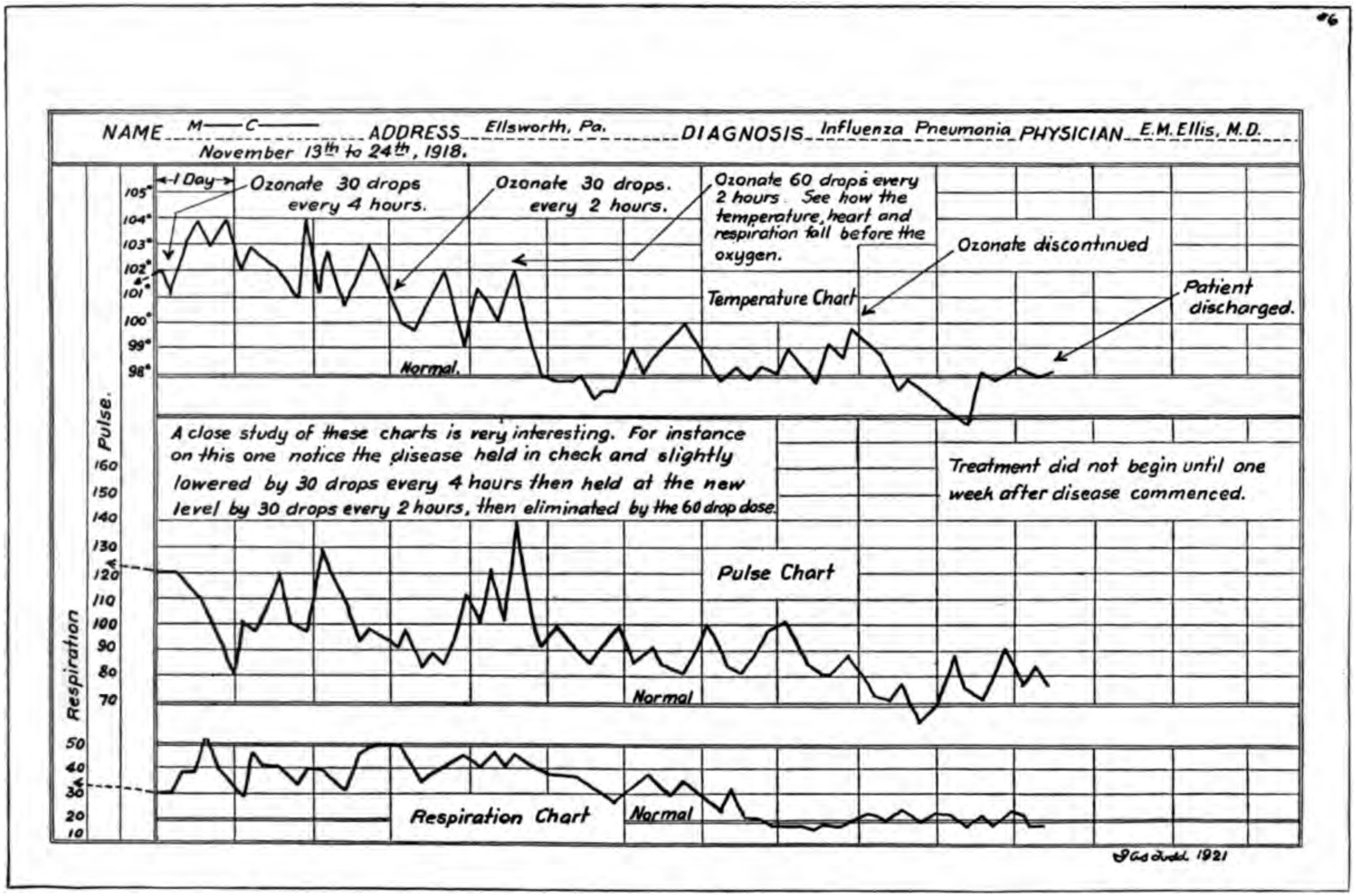
Ozonate 30 drops every 2 hours.

Ozonate 60 drops every 2 hours. Notice how the disease breaks under this dose.

Patient discharged.

Jas Dodd 1921

5
NAME N—B—
ADDRESS Ellsworth, Pa.
DIAGNOSIS Pneumonia
PHYSICIAN E.M.Ellis M.D.
October 27th to November 13th, 1918.
1 Day
Ozonate commenced 30 drops every 4 hours
Ozonate 60 drops every 2 hours.
Ozonate 30 drops every 2 hours
Ozonate discontinued.
Patient discharged.
Temperature Chart.
Normal
105°
104°
103°
102°
101°
100°
99°
98°
Pulse.
160
150
140
130
120
110
100
90
80
70
Pulse Chart
Normal
Respiration.
50
40
30
20
10
Respiration Chart.
Normal
1921



NAME M—— C—— ADDRESS Ellsworth, Pa. DIAGNOSIS Influenza Pneumonia PHYSICIAN E. M. Ellis, M.D.

November 13th to 24th, 1918.

Ozonate 30 drops every 4 hours.

Ozonate 30 drops. every 2 hours.

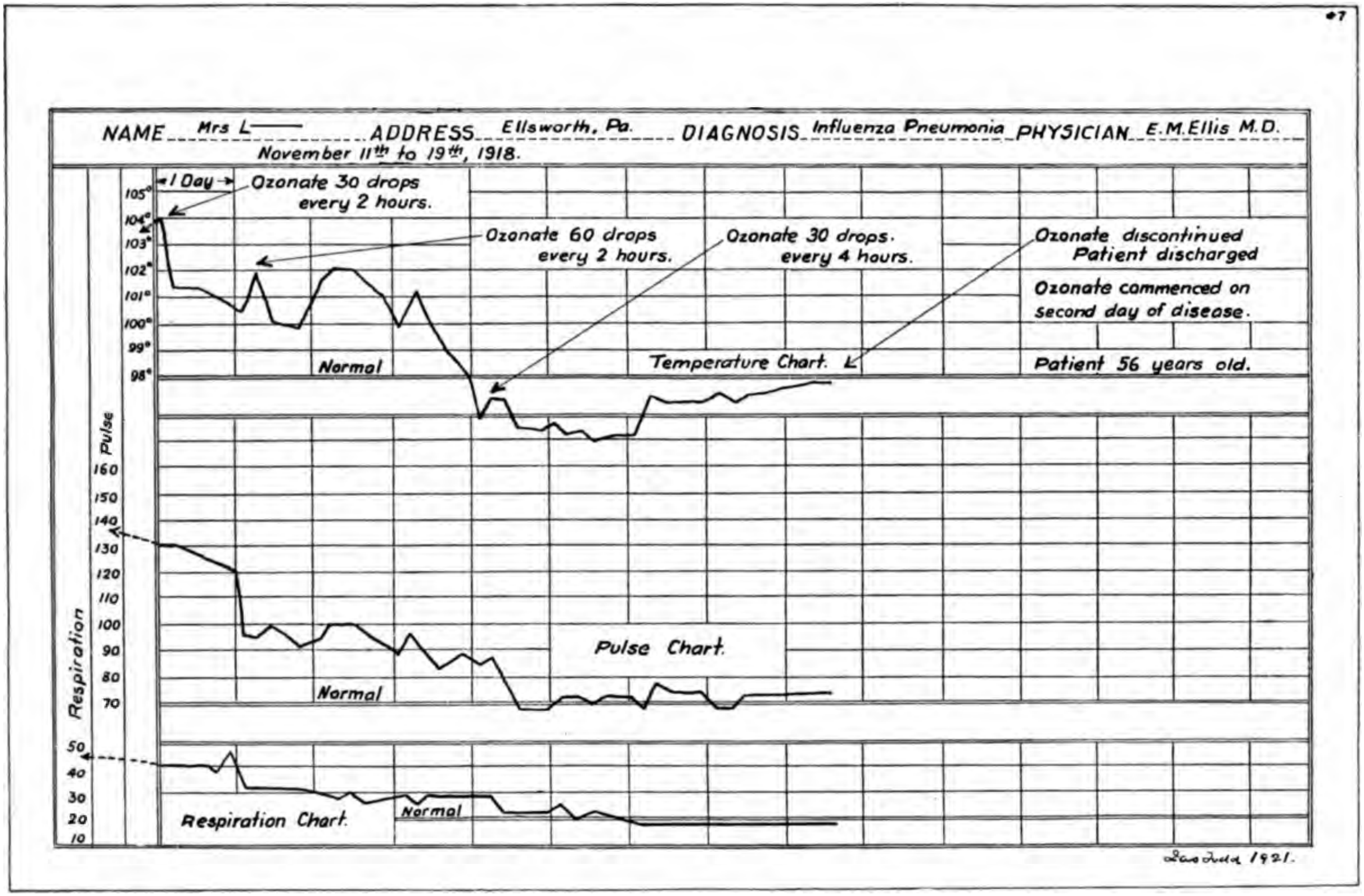
Ozonate 60 drops every 2 hours. See how the temperature, heart and respiration fall before the oxygen.

Ozonate discontinued

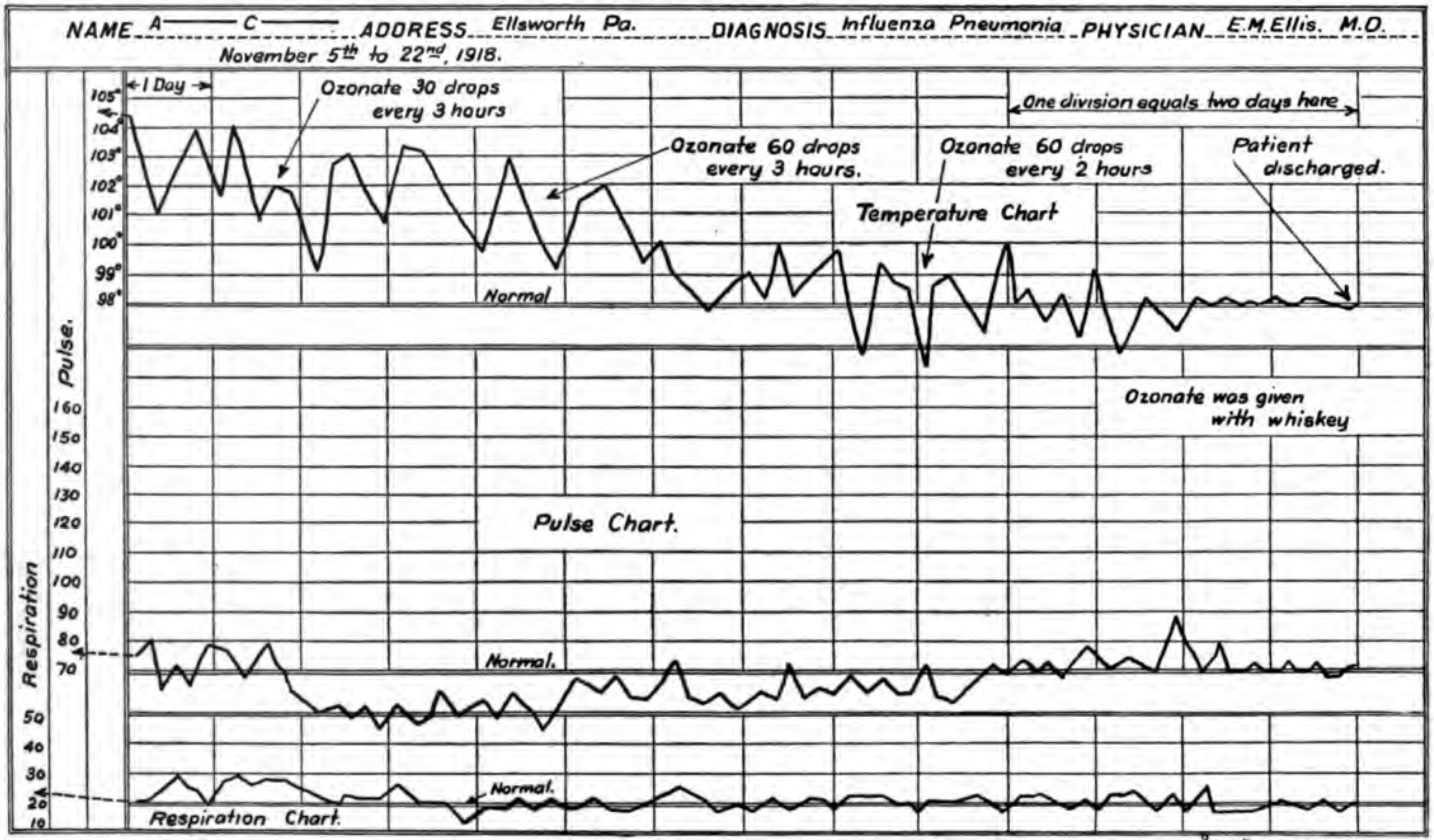
Patient discharged.

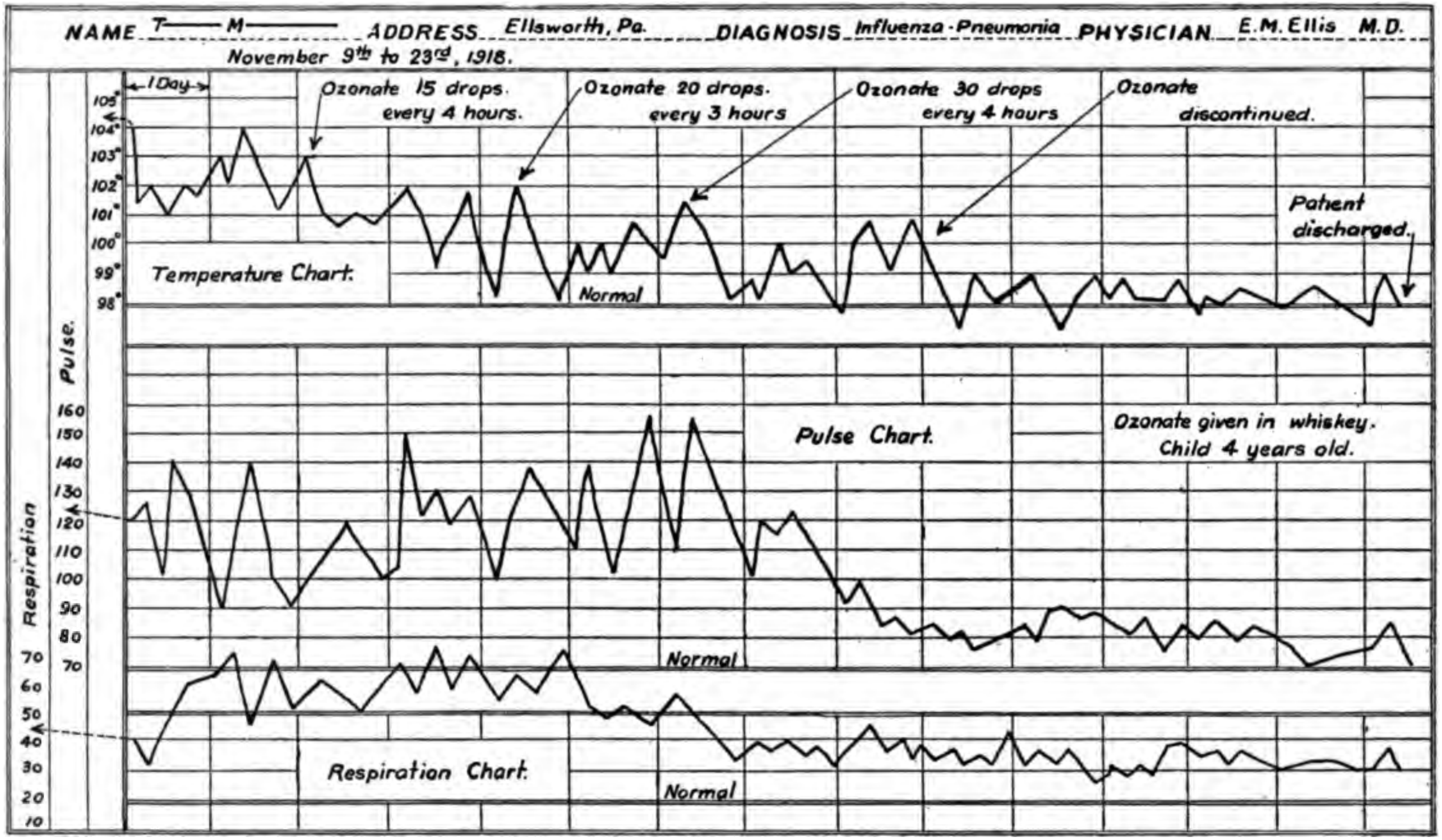
A close study of these charts is very interesting. For instance on this one notice the disease held in check and slightly lowered by 30 drops every 4 hours then held at the new level by 30 drops every 2 hours, then eliminated by the 60 drop dose.

Treatment did not begin until one week after disease commenced.


#7
NAME Mrs L—— ADDRESS Ellsworth, Pa. DIAGNOSIS Influenza Pneumonia PHYSICIAN E.M.Ellis M.D.
November 11th to 19th, 1918.
← 1 Day →
Ozonate 30 drops every 2 hours.
Ozonate 60 drops every 2 hours.
Ozonate 30 drops. every 4 hours.
Ozonate discontinued Patient discharged
Ozonate commenced on second day of disease.
Patient 56 years old.
Temperature Chart.
Normal
105°
104°
103°
102°
101°
100°
99°
98°
Pulse
160
150
140
130
120
110
100
90
80
70
Pulse Chart.
Normal
Respiration
50
40
30
20
10
Respiration Chart.
Normal
Das Judd 1921.

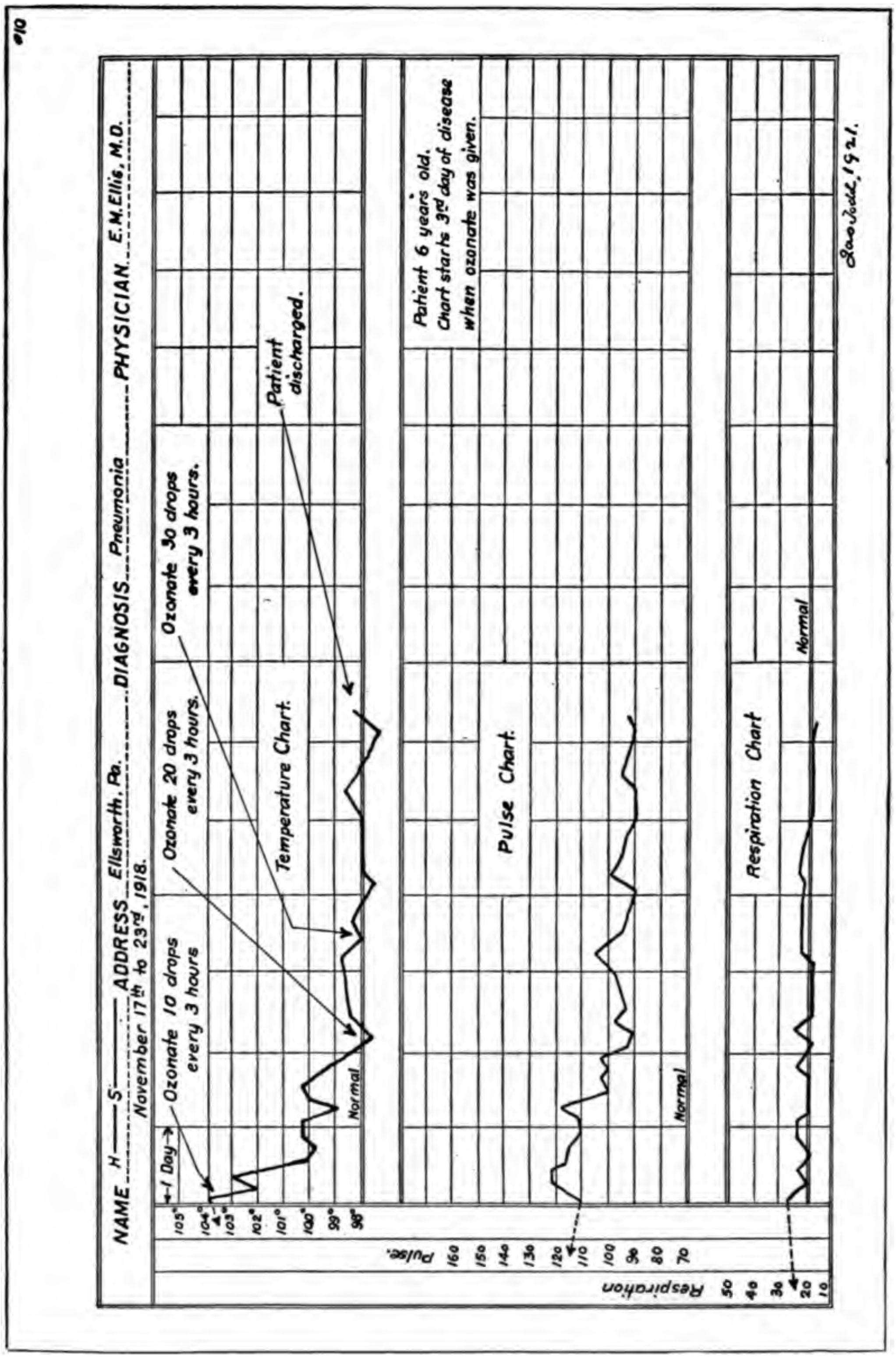
#8


NAME A——— C——— ADDRESS Ellsworth Pa. DIAGNOSIS Influenza Pneumonia PHYSICIAN E.M.Ellis. M.D.
November 5th to 22nd, 1918.
←1 Day →
Ozonate 30 drops every 3 hours
Ozonate 60 drops every 3 hours.
Ozonate 60 drops every 2 hours
One division equals two days here
Patient discharged.
Temperature Chart
Normal
105°
104°
103°
102°
101°
100°
99°
98°
Pulse.
160
150
140
130
120
110
100
90
80
70
Pulse Chart.
Ozonate was given with whiskey
Normal.
Respiration
50
40
30
20
10
Normal.
Respiration Chart.
1921.

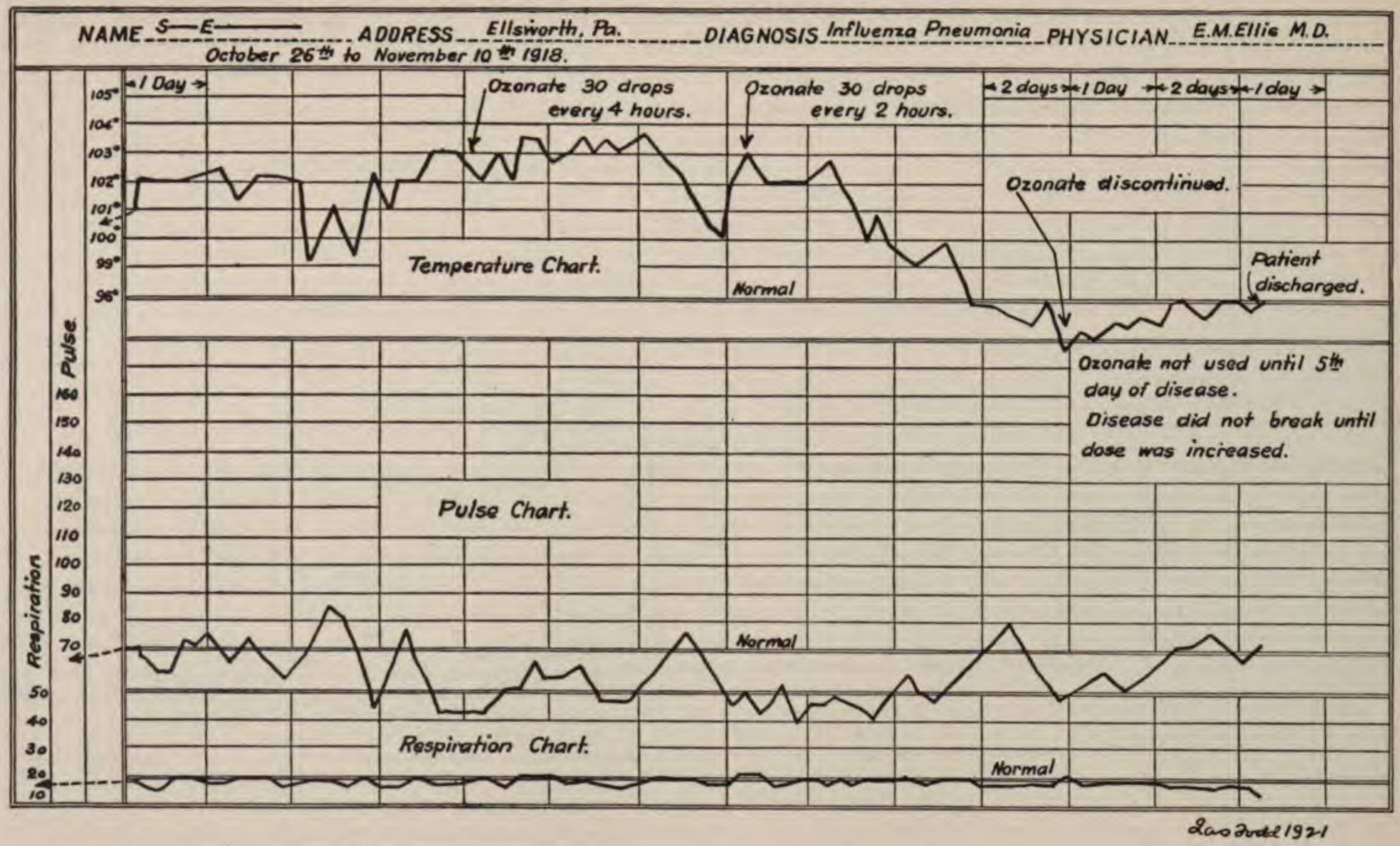


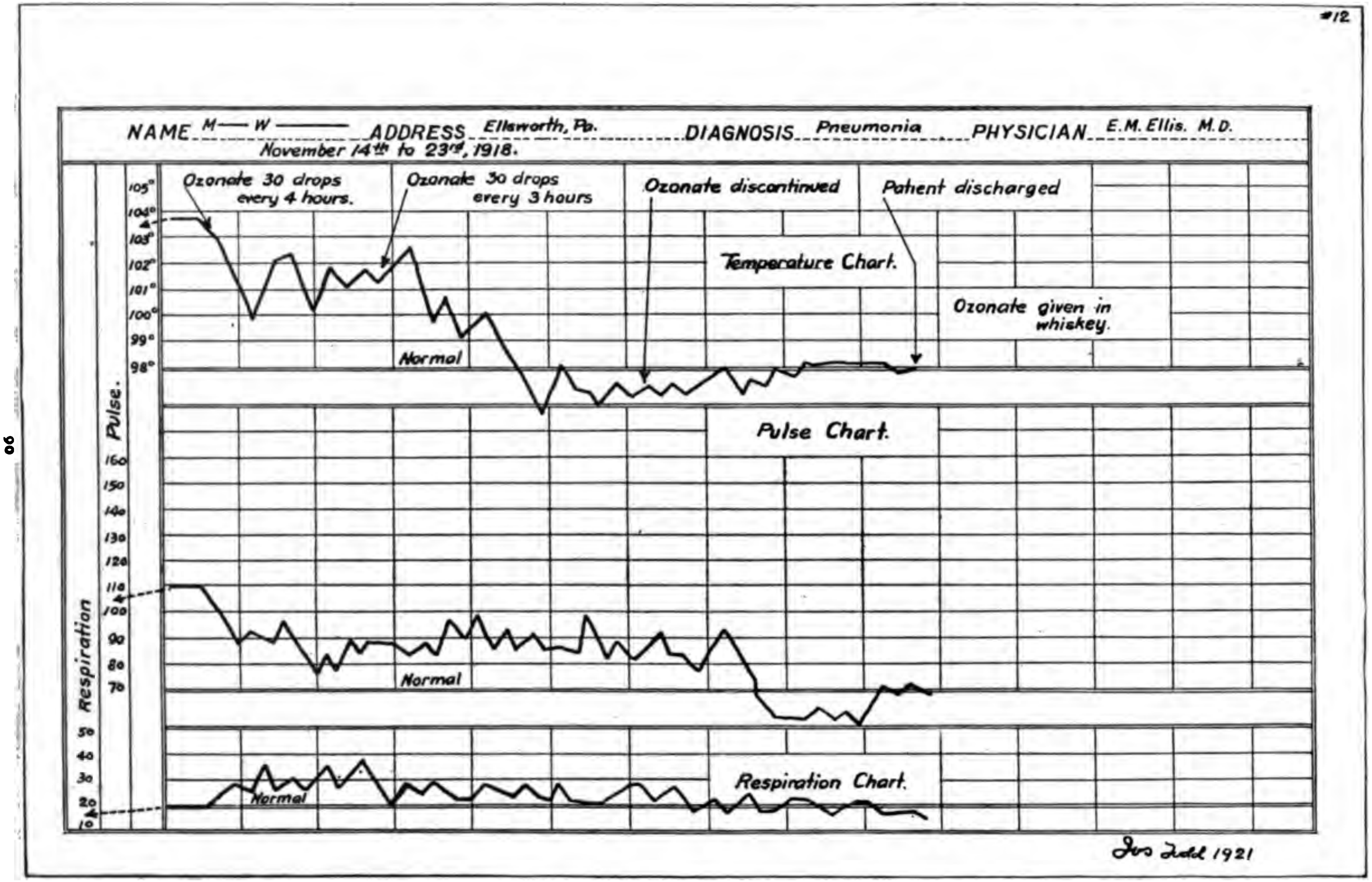
NAME T—— M—— ADDRESS Ellsworth, Pa. DIAGNOSIS Influenza-Pneumonia PHYSICIAN E. M. Ellis M.D.
November 9th to 23rd, 1918.

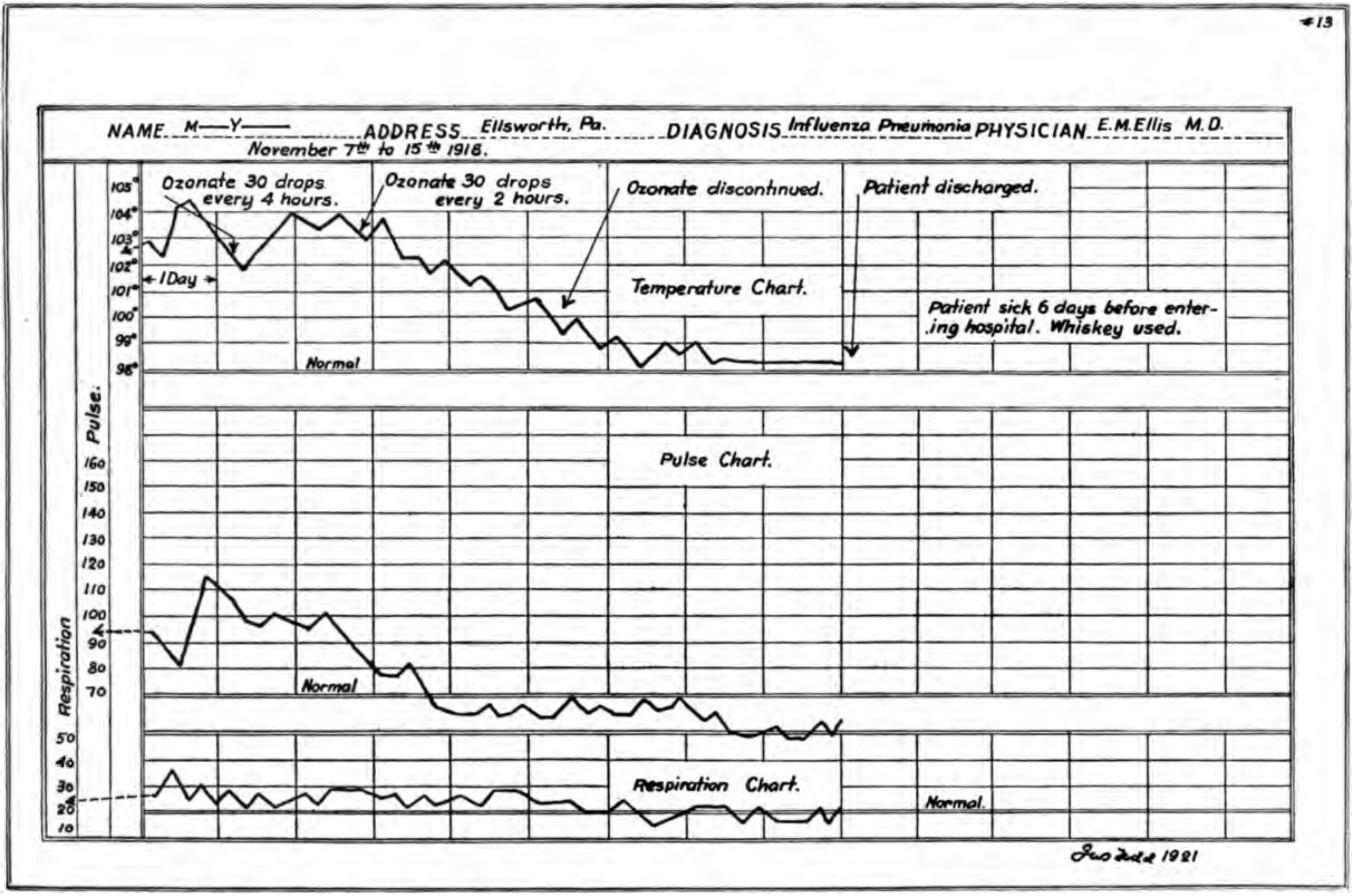
Jas Judd 1921


#10
NAME H— S— ADDRESS Ellsworth, Pa. DIAGNOSIS Pneumonia PHYSICIAN E.M.Ellis, M.D.
November 17th to 23rd, 1918.
←1 Day→
Ozonate 10 drops every 3 hours
Ozonate 20 drops every 3 hours.
Ozonate 30 drops every 3 hours.
Temperature Chart.
Patient discharged.
Normal
105°
104°
103°
102°
101°
100°
99°
98°
Pulse.
160
150
140
130
120
110
100
90
80
70
Pulse Chart.
Normal
Respiration
50
40
30
20
10
Respiration Chart
Normal
Patient 6 years old.
Chart starts 3rd day of disease when ozonate was given.
Geo Todd, 1921.

• 11

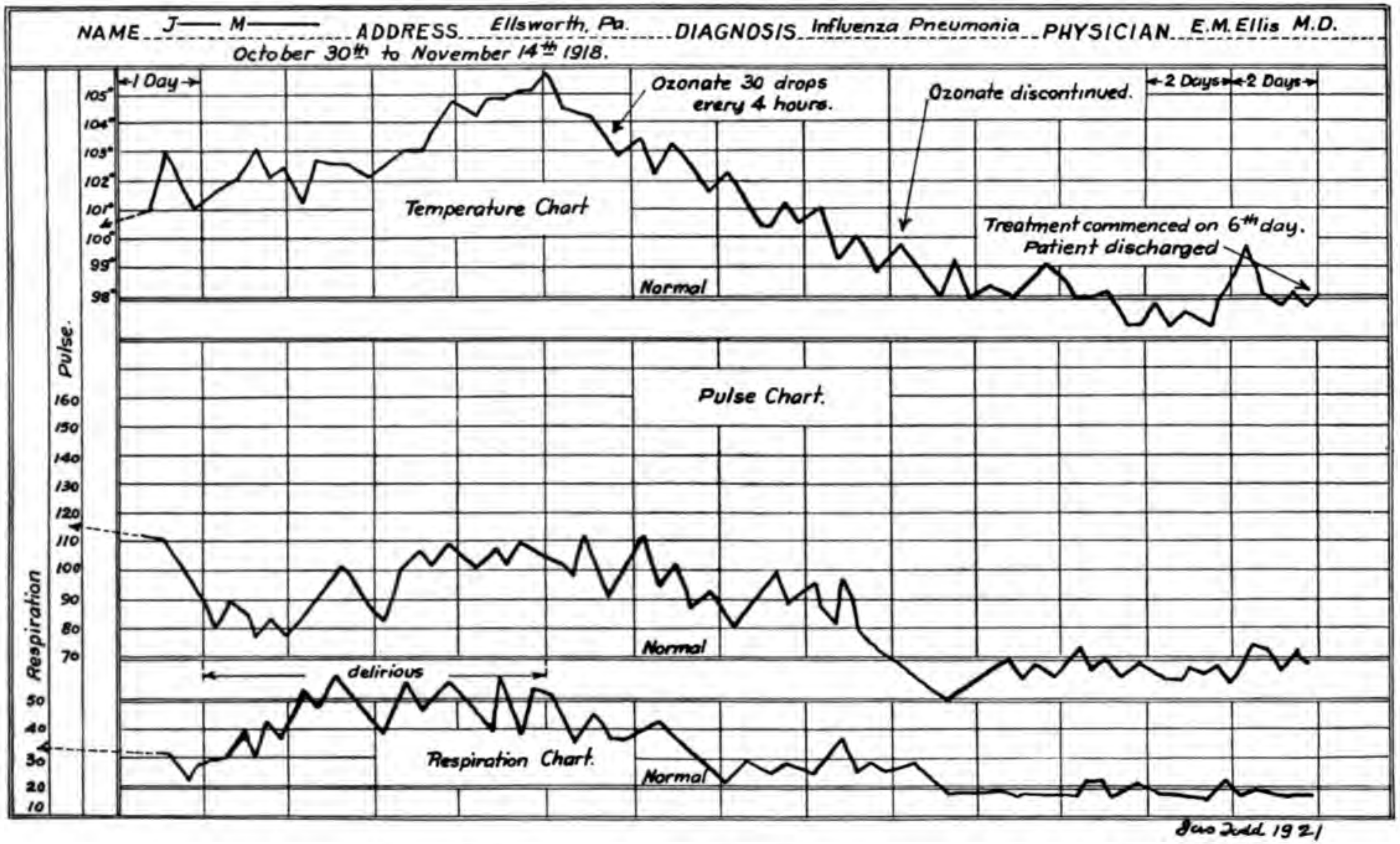

NAME S—E——
ADDRESS Ellsworth, Pa.
DIAGNOSIS Influenza Pneumonia
PHYSICIAN E.M.Ellis M.D.
October 26th to November 10th 1918.
1 Day
Ozonate 30 drops every 4 hours.
Ozonate 30 drops every 2 hours.
2 days
1 Day
2 days
1 day
Ozonate discontinued.
Patient discharged.
Temperature Chart.
Normal
105°
104°
103°
102°
101°
100°
99°
98°
Pulse
160
150
140
130
120
110
100
90
80
70
Respiration
50
40
30
20
10
Ozonate not used until 5th day of disease.
Disease did not break until dose was increased.
Pulse Chart.
Normal
Respiration Chart.
Normal
Leo Dodd 1921


#12
NAME M—— W———
ADDRESS Ellsworth, Pa.
DIAGNOSIS Pneumonia
PHYSICIAN E. M. Ellis. M.D.
November 14th to 23rd, 1918.
Ozonate 30 drops every 4 hours.
Ozonate 30 drops every 3 hours
Ozonate discontinued
Patient discharged
Temperature Chart.
Ozonate given in whiskey.
Normal
105°
104°
103°
102°
101°
100°
99°
98°
Pulse.
Pulse Chart.
160
150
140
130
120
110
100
90
80
70
Normal
Respiration
Respiration Chart.
50
40
30
20
10
Normal
1921



NAME M——Y—— ADDRESS Ellsworth, Pa. DIAGNOSIS Influenza Pneumonia PHYSICIAN E.M.Ellis M.D.
November 7th to 15th 1918.

#14



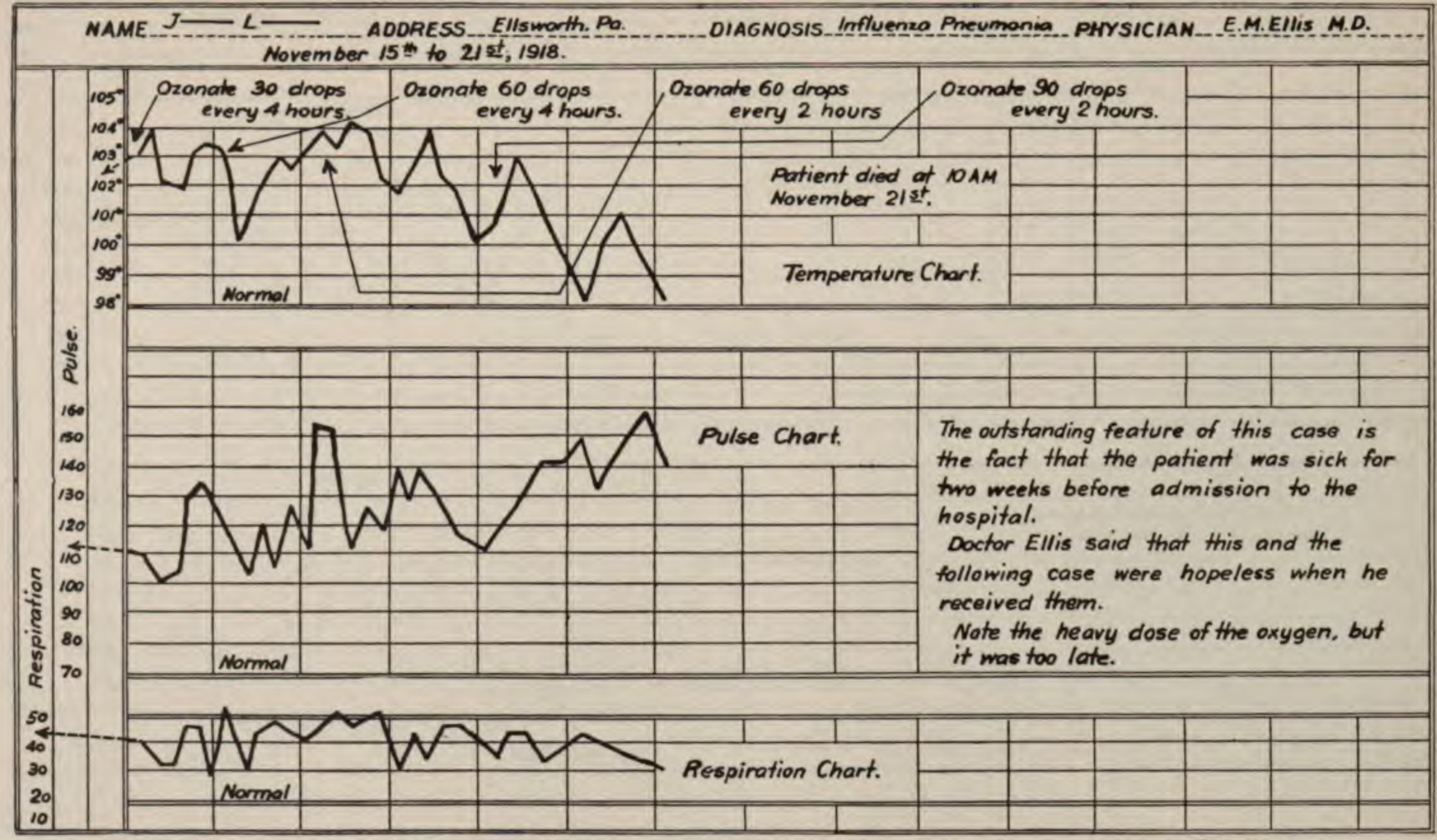
NAME J—— M—— ADDRESS Ellsworth, Pa. DIAGNOSIS Influenza Pneumonia PHYSICIAN E.M.Ellis M.D.

October 30th to November 14th 1918.

#15

NAME J—— L—— ADDRESS Ellsworth, Pa. DIAGNOSIS Influenza Pneumonia PHYSICIAN E. M. Ellis M.D.

November 15th to 21st, 1918.



Ozonate 30 drops every 4 hours.

Ozonate 60 drops every 4 hours.

Ozonate 60 drops every 2 hours

Ozonate 90 drops every 2 hours.

Patient died at 10 AM November 21st.

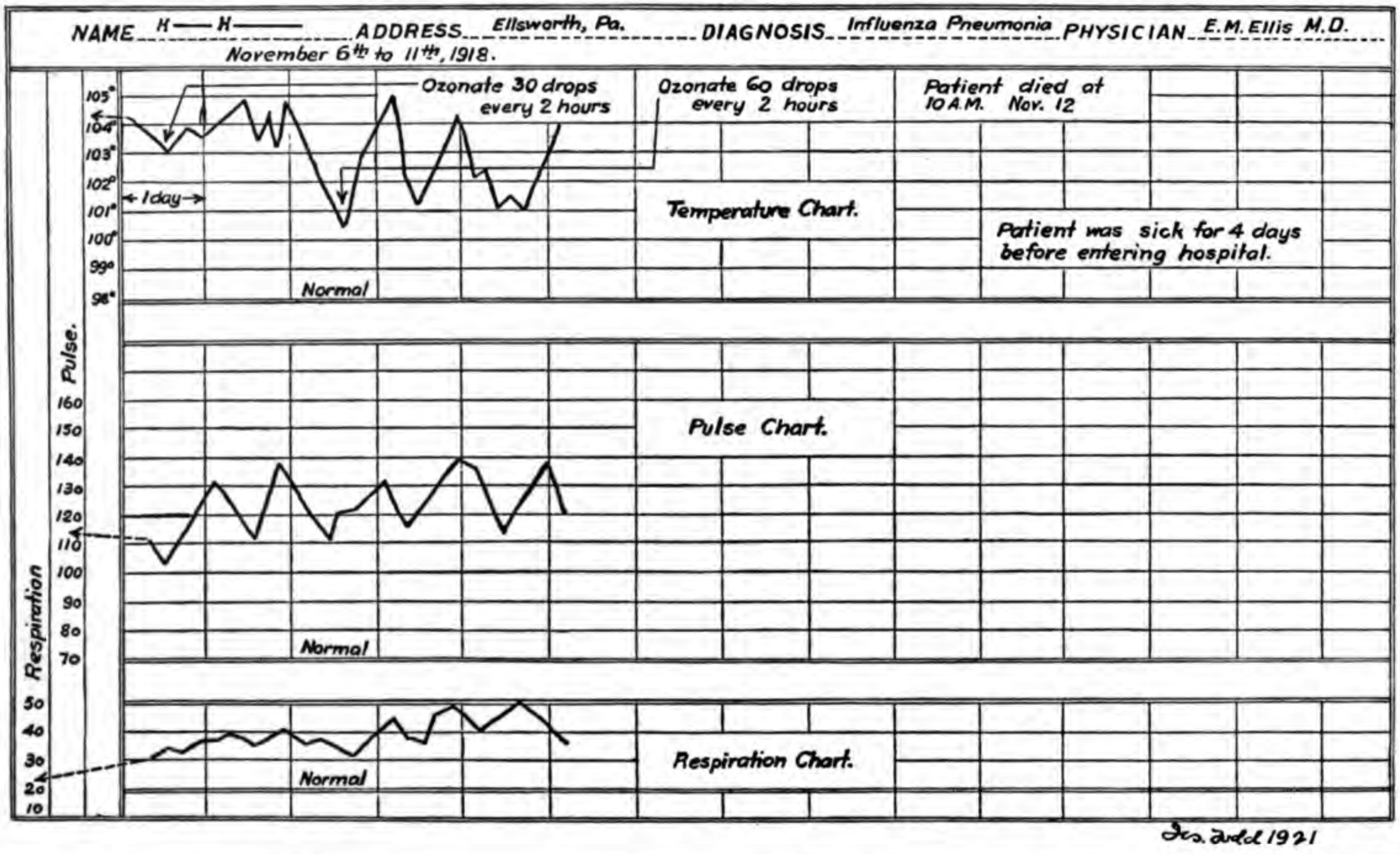
The outstanding feature of this case is the fact that the patient was sick for two weeks before admission to the hospital.

Doctor Ellis said that this and the following case were hopeless when he received them.

Note the heavy dose of the oxygen, but it was too late.

Geo Judd 1921.

#16



NAME H—— H—— ADDRESS Ellsworth, Pa. DIAGNOSIS Influenza Pneumonia PHYSICIAN E.M. Ellis M.D.
November 6th to 11th, 1918.

THE FACTS ESTABLISHED FROM ANOTHER SOURCE

In the fall of 1919, Doctor E. Fernandez, B.S., M.D., of Fajardo, Porto Rico, came to see us and asked to take part in the work.

We were particularly fortunate in obtaining the services of Doctor Fernandez as he is a chemist as well as a physician, and consequently was in a far better position to appreciate the significance of oxygen in organic life than the ordinary physician could possibly be. When on a visit to the University of Chicago, where he had taken his medical degree, he chanced upon our book in the library and came to see us.

Doctor Fernandez's work, while done under the very great handicap caused by the distance from the source of supply of the oxidized oils and the heat to which they were exposed in transit was a brilliant piece of work and one that will always reflect credit upon him.

The oxidized oils lose their power in a short time and heat increases their deterioration; we issue them fresh every two weeks so that by the time he would receive a supply of oxidized oil we, in the north, would have discarded it for a new lot.

Doctor Fernandez is a very close and accurate observer and he noticed that the oxidized oils, when received by him in the tropics, were slightly darker in color than those he had seen in Pittsburgh and that they deepened in color while he had them in his possession.

He reported this fact to us and it led to an investigation and a line of experiments that have put us in possession of some very valuable data.

We will explain this in detail in a later chapter on the making and using of these oxidized compounds.

We will now record Doctor Fernandez's cases; they are both interesting and conclusive.

THE CASE OF M——— C———

COMMITTEE

DIAGNOSIS BLANK

November 1st, 1919.

Name: M——— C———. *Address:* Fajardo, Porto Rico.

Nationality: Porto Rican. *Occupation:*———. *Social Condition:*———.

Age: 3 years. *Height:*———. *Weight:*———.

Temperature: 103°. *Pulse:* 150. *Respiration:* 45. *Blood Pressure:*———.

All Previous Illness: Prone to colds; nephritis when two years old.

Full History of Present Trouble: The child complained of headache, and of feeling sick. She was put to bed because of the growing cold and fever. That same morning she had been up and around, although sickly.

How Long Since Present Illness Began: One day.

Urine Specific Gravity: 1.010. *Albumin:* Negative. *Sugar:* Negative.

Previous Treatment: Quinine SO_4 and a cough sedative.

Diagnosis: Influenza—beginning broncho-pneumonia.

(Signed) E. FERNANDEZ, B.S., M.D.,
Fajardo, Porto Rico.

REPORTS

Dates.	Time of Day.	Respiration.	Pulse.	Temperature	Dose: Drops In 24 Hours.	Treatment Started: Nov. 1st, 1919, at 2:30 P.M. Treatment Stopped: Nov. 5th, 1919, at 11:15 A.M.
Digest of the Diagnosis.						
11-1-19		45	150	103.0		The child complained of headache and of feeling sick. She was put to bed because of the growing cold and fever.
Data from Physician's Reports.						Digest of the Physician's Reports.
11-1-19	2:30 P.M.	45	150	103.0	360	Oxygen treatment just commenced. Restless at first, then prostrated. 30 drops Ozonate given every 2 hours.
11-1-19	9:10 P.M.	45	150	103.0	360	Seven hours later. No material change in condition. 30 drops Ozonate every 2 hours.
11-2-19	9:35 A.M.	30	120	99.0	360	Twelve hours later. Symptoms changed to radically better. General condition very much improved; slept all night.
11-2-19	5:30 P.M.	31	122	99.5	360	Eight hours later. Practically no change in symptoms. General condition about as last—slight rise in temperature, pulse and respiration. Sleeping soundly. 30 drops Ozonate every 2 hours.
11-3-19	10:00 A.M.	28	106	99.0	360	Seventeen hours later. Practically no change in symptoms. The child feels perfectly well.
11-3-19	5:15 P.M.	35	112	99.8	360	Seven hours later. Slight rise in pulse, respiration and temperature. Child feels perfectly well.
11-4-19	10:00 A.M.	26	100	98.6	360	Seventeen hours later. Symptoms change towards normal. Seems perfectly well.
11-4-19	6:40 P.M.	25	96	99.0	360	Nine hours later. Practically no change in symptoms. Seems well.
11-5-19	11:15 A.M.	23	85	98.4		Patient discharged as well. This child was very sick and restless at first; then prostrated After a few hours, treatment—30 drops Ozonate every 2 hours—the anxious, sad look gave way to an expression of well being. No other treatment of any kind was used excepting the Ozonate (oxidized cod liver oil). (Signed) E. FERNANDEZ, B.S., M.D.

NOTE: The heavy dose used for a child of three years. Discharged as cured in four days.

We here have a clearly defined case—respiration 45, pulse 150, temperature 103° F.

In less than twenty-four hours the oxygen is in control and the child out of danger.

Pneumonia on the first of November and the patient discharged as well on the fifth; no comment seems necessary, excepting to ask the reader to follow closely the tabulated results of the treatment and so *see* the oxygen do its work.

THE CASE OF MRS. B————

COMMITTEE

DIAGNOSIS BLANK

Name: Mrs. B————. *Date:* January 15th, 1920.

Address: Rio Grande, Porto Rico. *Occupation:* Domestic.

Nationality: Porto Rican. *Social Condition:* Married.

Age: 28 years. *Height:*——— *Weight:* 220 pounds (about).

Temperature: 104°. *Pulse:* 150. *Respiration:* 50. *Blood Pressure:*———

All Previous Illness: Frequent attacks of malaria. Eclamptic attacks two years ago. Six months' pregnant at present time.

Full History of Present Trouble: I was called in consultation by Doctor ————, of Rio Grande, Porto Rico, because of the critical condition of the patient. She is an obese, but strong looking young lady, lying on her back, propped up on pillows. She says she feels very sick. Looks anxious and has a very rapid shallow breathing and galloping weak pulse. Has not been feeling well for several days. Three days ago she had a chill, followed by rapid rise in temperature up to what it is now. Had rusty sputum for two days. Began to grow worse since this morning (it is now 9:00 P.M.). She has no definite area of consolidation of lungs. Sputum shows pneumococci, streptococci and fusiform bacilli (of influenza).

How Long Since Present Illness Began: Three days ago.

Previous Treatment: Quinine SO_4 intramuscularly every 6 hours with spartein SO_4 during the first 24 hours. Digitalis, brandy, hot and cold applications to chest, baths, cathartics, etc. had been the general treatment.

Diagnosis: Severe broncho-pneumonia—(influenza).

(Signed) E. FERNANDEZ, B.S., M.D.,
Fajardo, Porto Rico.

REMARKS

Jan. 15.—All treatment was discontinued except an ice pack to the heart, alcoholic rubs every half hour, if not annoying to her; a warm aqueous enema followed by a careful abdominal massage with 20% camphorated oil and a 30 drop capsule of Ozonate every 2 hours with a teaspoonful iced brandy. The oil is to be increased to 60 drops after 6 hours if it is well borne, and was increased to this amount.

REPORTS

January 16—At 4:00 P.M.

The lady is sitting up in bed and is very much relieved; says she feels much better. Her general condition is greatly improved.

January 18—

Doctor ——— informed me by telephone that Mrs. B——— is greatly improved and hopes she will be up and around soon.

(Signed) E. FERNANDEZ, B.S., M.D.

We would attract the reader's attention to the *fact of pregnancy in this case*, the seriousness of this complication in pneumonia needs no explanation from us.

Again the oxygen controls within twenty-four hours and in a few days she is well.

THE CASE OF C——— C———

COMMITTEE

DIAGNOSIS BLANK

Name: C——— C———. *Date:* February 1st, 1920.
Address: Fajardo, Porto Rico. *Occupation:* Laborer.
Nationality: Porto Rican. *Social Condition:* Single.
Age: 20 years. *Height:*———. *Weight:*———.
Temperature: 104°. *Pulse:* 135. *Respiration:* 40. *Blood Pressure:*———.
Alcoholism: No. *Drug Addiction:* No. *Tobacco:* No.

Full History of the Present Trouble: This is a very sick, apathetic looking boy, with a flushed face and rapid breathing. Lies on his back on a home-made cot, in a "stuffy," crowded, small room. A bowl with rusty, purulent sputum lies at the bedside. "Had been sick for three days with a very high fever, marked cough and dirty sputum." He has a very congested right lung.

How Long Since Present Illness Began: Three days.

Previous Treatment: Usual treatment under the care of another physician.

Diagnosis: Lobar pneumonia.

(Signed) E. FERNANDEZ, B.S., M.D.,
Fajardo, Porto Rico.

REMARKS

February 1—All other medicine discontinued and 30 drops Ozonate given every 2 hours.

DOSES OF OZONATE USED.	REPORTS.
Feb. 2—60 drops every two hours. (720 drops in 24 hours.)	Feb. 2—Boy still very ill. Very coated tongue. Rapid respiration.
Feb. 3— Dose unchanged.	Feb. 3—The boy feels and looks much better.
Feb. 4—30 drops every two hours. (360 drops in 24 hours.)	Feb. 4—I feel that the boy is out of danger. Temperature, pulse and respiration are a good deal lower.
Feb. 5—Dose unchanged.	Feb. 5—Boy looks fairly well; out of his ordeal.
Feb. 6—30 drops 3 times a day, to be continued for three days.	Feb. 6—Feels and looks well.
Feb. 9—Treatment discontinued.	Feb. 9—Discharged as cured.
NOTE:—Discharged as cured in 8 days.	

(Signed) E. FERNANDEZ, B.S., M.D.

Another well-defined case of pneumonia; respiration 40, pulse 135, temperature 104° F.

As this case does not break under the thirty-drop dose the physician increases it to sixty drops every two hours on the following day; the disease breaks before the oxygen and the boy is discharged on the ninth day.

THE CASE OF B——— C———

COMMITTEE
DIAGNOSIS BLANK

Name: B——— C———. *Date:* February 3d, 1920.
Address: Fajardo, Porto Rico. *Occupation:* Chauffeur.
Nationality: Porto Rican. *Social Condition:* Married.
Age: 30 years. *Height:* 5 ft. 6 in. *Weight:* 160 pounds.
Alcoholism: No. *Drug Addiction:* No. *Tobacco:* Moderate.

Full History of Present Trouble: After a hard trip on a truck he went to bed with a slight toothache and slight swelling of right cheek. Three days afterwards the upper lip and right cheek became greatly inflamed and tender. The right eye can scarcely be opened. The lower jaw has a very small amount of motion. There is a large abscess starting from the gum of a decayed upper molar.

How Long Since Present Illness Began: Four days.

Previous Treatment: Hot and cold applications to face and ichthiol ointment.

Diagnosis: Large abscess of gums and diffuse cellulitis of right cheek.

(Signed) E. FERNANDEZ, B.S., M.D.,
Fajardo, Porto Rico.

REPORTS

February 3—All previous treatment was discontinued and the man was given 30 drops of Ozonate every 2 hours. All the inflammation and the abscess disappeared in two days.

(Signed) E. FERNANDEZ, B.S., M.D.

Here we have a large abscess. The report says "*All the inflammation and the abscess disappeared in two days.*"

The preceding case (of pneumonia) and this case, are evidently those of two brothers, sick in the same house, at the same time, under the care of the same physician, one with a severe abscess, the other with pneumonia, and we would ask the reader to pause a moment to realize what this scene means.

This physician had been trained to consider each disease as a separate problem. What must have been his feelings when he realized that that day was past, *a new power had risen, a new hope for those who suffered?*

This is not patent medicine talk. It is true that the patent medicine man so talks; he talks for profit and without justification. That does not in any sense prohibit our endeavoring to place vividly before your eyes a situation, tense with meaning and wonderful with promise.

We must not lose this thing, you the world, and I, just one man fighting alone, year after year, for what I know is right, fighting just to arouse you to your own interests.

THE CASE OF M——— C———

COMMITTEE

DIAGNOSIS BLANK

Name: M——— C———. *Date:* November 19th, 1919.
Address: Fajardo, Porto Rico. *Occupation:*———.
Nationality: Porto Rican. *Social Condition:*———.
Age: 2 years. *Temperature:* 103½°. *Respiration:* Labored.

Full History of Present Trouble: For several days this child has had difficulty in swallowing and swollen face—both conditions increasing alarmingly. Has been for three days without rest or sleep and today has not been able to swallow even water. The child is restless and crying. The face is very swollen and tender. The left tonsil covers over half the pharyngeal space. The child allows nobody but his mother to touch him.

How Long Since Present Illness Began: Eight days.

Previous Treatment: Ung. Ichthiol and Belladonna.

Diagnosis: Retrotonsillar abscess.

(Signed) E. Fernandez, B.S., M.D.,
Fajardo, Porto Rico.

REPORTS

TREATMENT COMMENCED NOV. 19, 1919.

Doses of Ozonate Used.	Reports.
Nov. 19—30 drops every two hours. (360 drops in 24 hours.) Note:—The heavy dose for a child of 2 years of age.	Nov. 19—2:00 P.M. Treatment commenced. Temperature 103½°; respiration labored. General condition very bad and increasing alarmingly. Contents of first capsule had to be forced down the child's throat with a spoon.
Nov. 20—30 drops every two hours.	Nov. 20—9:30 P.M. (31 hours later) Symptoms show improvement. The child slept well last night. Is now sleeping lying on the inflamed side.
Nov. 22—30 drops every two hours. Note:—This is the third case where the treatment was discontinued in the midst of the fight. In each case the disease immediately returned but was eliminated by a return to the original treatment. J. T.	Nov. 22—9:30 P.M. (48 hours later) Change in symptoms to worse; restless and in anguish. Face beginning to swell again. Temperature 103°. The child's mother had discontinued the treatment through a misunderstanding and as a result the disease had returned. Recommenced the use of the Ozonate at once.
Nov. 23—30 drops every two hours.	Nov. 23—Child much better.
Nov. 25—Treatment discontinued. Note:—Discharged as cured in 6 days.	Nov. 25—Child is well.

(Signed) E. Fernandez, B.S., M.D.

This child was in a desperate condition. Please notice the quick action of the oxygen, the child saved, then the lapse in the treatment, resulting in the return of the disease, the treatment reëstablished and the child discharged as well in six days.

If we consider influenza-pneumonia as a separate disease, we have now placed before you many cases covering five diseases of a very fatal character.

TUBERCULOSIS,
NEPHRITIS,
ABSCESSES,
PNEUMONIA,
INFLUENZA–PNEUMONIA.

The proofs are beyond cavil and they are repeated time after time.

We have now done our full part; if this work is lost the responsibility is not ours, it is yours; if you drop the matter there is no hope left for the process, for we too shall drop it.

THE SIGNIFICANCE OF THE LAPSES IN TREATMENT

Let us presume that the criticism, if criticism it could be called, had been made, that the oxygen had nothing to do with the matter; that these people all just happened to get well, we being fortunate enough to have, in each case, commenced the treatment at the psychological moment.

While such a criticism would of necessity recoil upon its author when faced with the amount and diversity of the evidence, yet often the ill-considered words of the individual go far abroad and it is perhaps wise to meet the situation before it arises.

Again, the evidence furnished by the broken treatments is so conclusive of all the questions involved that it is well worthy of special consideration.

It must be admitted, that if we were to take a number of cases of different diseases and, clearly and definitely, break them with the oxygen, THEN take the oxygen away from the patient and clearly show the return of the disease, AGAIN resume the treatment and eliminate the disease, that we had established our process beyond discussion.

We have attracted the reader's attention to this evidence as we passed it by in the case records; we will now gather it together.

IN THE CASE OF I—— B————, BREAST ABSCESS, found on page 58:

By Doctor Danzer's letter you will find that the treatment was discontinued and within twenty-four hours the abscess ruptured. On resumption of the treatment the abscess speedily healed. Also note that the physician speaks of the impression made upon him, before the first discontinuance of the treatment, of the "fires that were dying out."

This is one of four cases that we have; alone it would not be very conclusive, as an abscess in the soft tissue of the breast, if of any size, would almost surely rupture, if for no other reason than its own weight.

In the light of the other cases this case becomes conclusive, for the reason that it did just what it ought to do under the circumstances.

THE CASE OF MISS B——— W———, PNEUMONIA, page 72:

When Doctor Lyon commenced the treatment the patient's condition was:

RESPIRATION 45 to 50 PULSE 150+ TEMPERATURE 105½°

Twelve hours later the following condition prevailed:

RESPIRATION 35 PULSE 100 TEMPERATURE 102° F.

The treatment was here discontinued; seventeen hours later the physician was again called and found the following condition:

RESPIRATION 40 PULSE 140 TEMPERATURE 104° F.

The oxygen had been taken from the patient before the elimination of the disease and the germ had struck back like lightning.

Again the oxygen is given and in twenty-four hours we find it again in control.

RESPIRATION 35 PULSE 90 TEMPERATURE 102° F.

This time the treatment is not stopped and the patient speedily recovers.

THE CASE OF J——— R———, page 80:

This is a case of influenza-pneumonia. We have previously spoken of the condition of the digestive organs in this disease and how Doctor Ellis controlled the situation by the use of a little whiskey; on account of this symptom a small initial dose of the Ozonate was given.

The disease holds its own against the small quantity of oxygen for three days, then the temperature falls in twenty-four hours from 104° to below 100°. The pulse from 128 to 102. The respiration from 31 to 20. The man commences to vomit and refuses to take the Ozonate and in eight hours' time we find the respiration rising from almost normal at 20 to 38. The pulse rises from 102 to 117. The temperature rises from 99.7° to 103.5°.

For twenty-four hours Doctor Ellis waits, then he restores the Ozonate, increased fifty per cent. above the previous amount and gives with it a little whiskey to enable it the better to assimilate.

The disease breaks and in less than four days the patient is discharged.

THE CASE OF M———— C————, ABCESS IN THROAT, page 101:

The beginning of this case shows the following conditions:

Temperature 103½°; respiration labored; general condition very bad, increasing alarmingly. The patient in anguish.

Thirty-one hours later Doctor Fernandez reports as follows:

"Symptoms show improvement, the child slept well last night. Is now sleeping on the inflamed side of its face."

There could not be much anguish left if the child were sleeping lying on the inflamed side of its face.

The remedy is discontinued by the child's mother through a misunderstanding and two days later the physician is again sent for and reports as follows:

"Change in symptoms to worse. Restless and in anguish. Face beginning to swell again."

"The child's mother had discontinued the treatment through a misunderstanding and as a result the disease has returned. Recommenced the use of the Ozonate at once."

This is followed the next day by the report that the child is much better.

Two days later it is discharged as well.

In these four cases, of two different diseases, the treatment is started and the oxygen at once takes control. The treatment is stopped and the disease quickly and positively reasserts itself. The treatment is again resumed, the oxygen again asserts its power and the patient speedily recovers.

Before these facts no denial is possible, no criticism can hold its own, especially as our records are open to proper investigation.

To the student of the process this evidence works back until it stands side by side with the ⊕ (O plus) as compared to the ⊖ (O minus) of our animals and shows that they, away back in 1910, did indeed point the way clearly. (See First Edition for details.)

We will now pass on to endeavor to tie this whole twelve years of work together, from the theory, through our animals, to consummation of practical fact in our human cases. This can and will be accomplished but it will be for the student, not the superficial reader.

REVIEW

At the beginning of the first edition of this book will be found the theory upon which this work is based. Back of this theory stands the writer's mind and perhaps we can best come to a conclusion by expressing, very tersely, some of his views.

To his mind oxygen is the controlling element in organic life; always beside it and acting in opposition to it, are the two most prominent reducing agents within the chemical series—hydrogen and carbon.

This seems to him to place the chemistry of life upon a very simple and stable foundation, namely oxidation and reduction. The complexities of the situation lie above this foundation and none of us know too much about them.

With such views the work was commenced and its developments have all sustained these same views. At no time have the results even tended to disprove the theory; almost, if not quite, universally, the facts have sustained the theory.

It is now our intention to bring together in this chapter certain features of our work for the purpose of concentrating the reader's attention upon the very strong proofs of the power of oxygen which the work holds.

We shall commence with an axiom.

If a number of guinea pigs, which are as nearly identical as possible, are divided into two groups and each group kept under the same conditions and fed the same, but the one group, marked ⊕ (O plus) as a matter of identification, are kept for say three months continuously under the influence of intensified oxygen, while the other group, marked ⊖ (O minus) as a matter of identification, are kept away from the influence of the intensified oxygen:

THEN if our claim that intensified oxygen can raise the vital forces of the living body is correct, the oxidized, ⊕, animals must show some proof of the truth of this theory when they in common with the natural, ⊖, animals, are brought to the ordeal of an identical inoculation. There can be no doubt that a thorough investigation of our work would finally center upon such a proposition as conclusive of the matter.

We place on page 110 the drawing THE PROPOSITION THAT IS AN AXIOM.

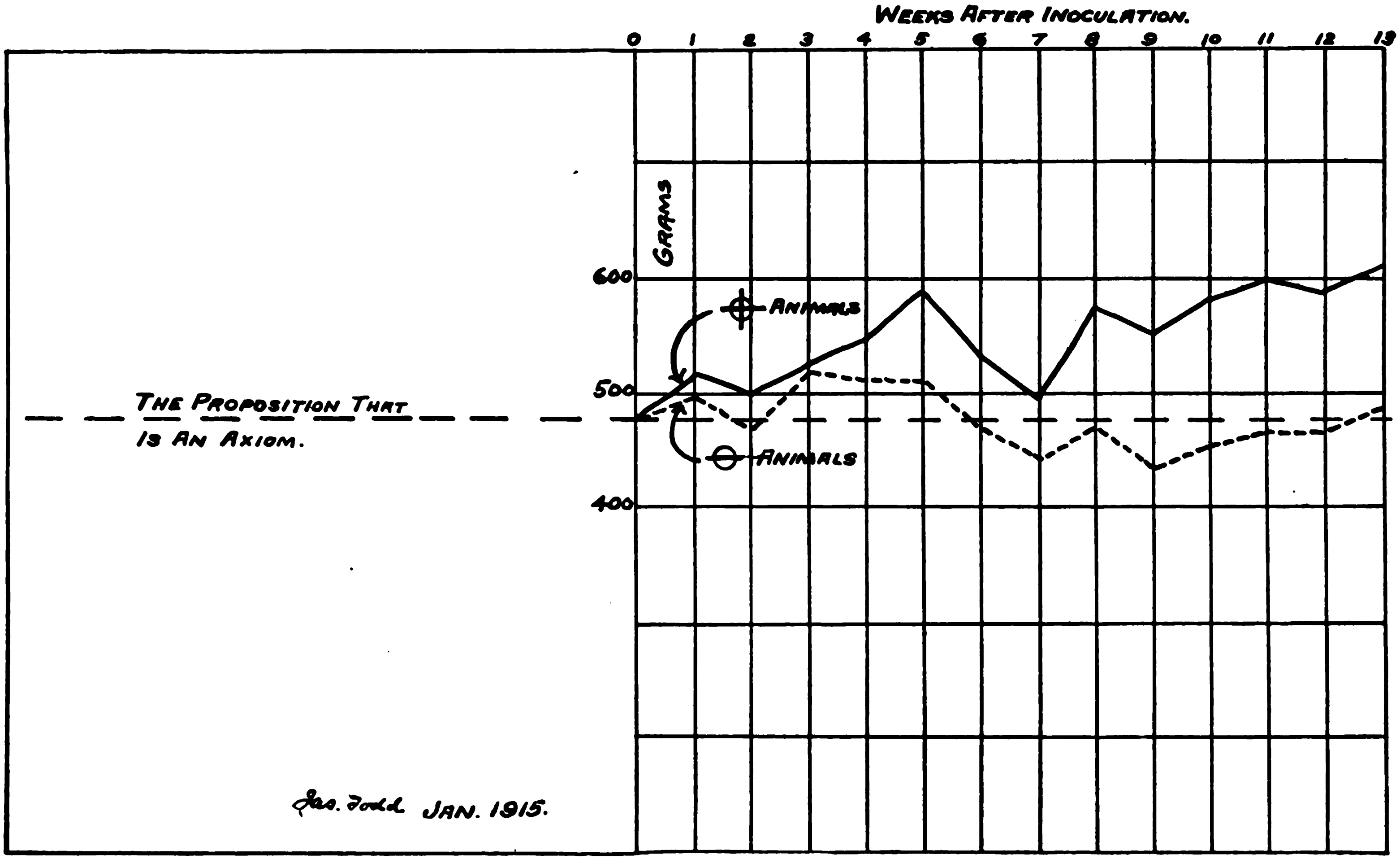
Here we have carried out all the conditions of our proposition allowing absolutely no difference between the two groups of animals excepting that the ones represented by the solid line were oxidized before their inoculation while the ones represented by the dotted line were natural animals.

As we see the two lines separate until at the end of thirteen weeks the oxidized animals weigh one hundred and twenty-five grams more than the natural ones we find that our proof is conclusive and our proposition sustained.

When we further note that the oxidized animals have increased in weight from four hundred and eighty grams to six hundred and ten grams, *an increase of more than twenty-five per cent. in weight, while the natural ones have barely held their original weights, we determine that the evidence is indisputable and the proposition that is an axiom stands too strongly to need argument.*

These lines are of four ⊕ animals and seven ⊖ ones. They are taken from section A, CHART No. 2 of the Nitrogen Experiment (First Edition), page 265. This is not a chance test of the work but is sustained by the experiments from one end to the other.

Turning to page 151 (First Edition) we find EXPERIMENT 1–14–10


WEEKS AFTER INOCULATION.
0
1
2
3
4
5
6
7
8
9
10
11
12
13
GRAMS
600
500
400
ANIMALS
ANIMALS
THE PROPOSITION THAT
IS AN AXIOM.
Jas. Todd JAN. 1915.

—THE ANIMALS UNDER TREATMENT—and the same evidence is shown in the difference between the weight curves of the oxidized and the natural animals.

Passing on to the August Experiment we find no drawing upon this plan but the whole experiment is full of the fact and the power of oxidation.

Passing by the November Experiment, as no preliminary oxidation was accomplished in this experiment, we come to the First May Experiment. We will not ask the reader to follow the question through all the drawings in this experiment, but rather to turn to page 243 (First Edition), where will be found CHART No. 3—CONCLUSIONS. This drawing is based on the First May Experiment and brings out the whole question.

In the Nitrogen Experiment—CHART No. 2, page 265 (First Edition), sections A, B and C deliver the same proofs.

Experiment 3–12–14 does not show this distinction between the two classes of animals as the machinery operations and treatments were too rapidly changed in this experiment to allow the proofs to come out.

There is no necessity of dwelling further upon this consistent proof of success. If this drawing cannot awaken interest, nothing that we can say could do so. We have laid down our axiom and are content with the result; all we ask is that the question be closely and intelligently examined.

In further review we would ask the reader to turn to the drawing Experiment 5–4–11—RESISTANCE TO TUBERCULOSIS ESTABLISHED—CHART No. 22, page 237 (First Edition), and again examine the comparative length of the life lines and so again face the question of resistance established and what it means.

Turning now from our animals to the work with the human cases we find that a comprehensive review would require the examination of each case anew; such a course should be followed by those who wish to become students of the power of oxygen but is hardly a review.

Instead of again referring to cases upon which we have previously laid special stress let us try, as far as possible, to use cases which have been lightly passed over, that we may learn that there is strength in all the records.

On page 32 will be found the case of Mr. G——— P———; to prevent repetition, we request that the reader turn to it and see tuberculosis go down before oxygen.

On page 54 will be found the case of I——— D——— — abscess under the arm—turn to it and see the oxygen cure an abscess without the aid of an incision; it means much.

On page 49 will be found a case of nephritis, patient No. 7. Glance over it and visualize the man as living and well today, nine years later.

On page 79 is placed the case of B——— B——— — influenza-pneumonia. Please notice Doctor Ellis' voluntary statement, "I fully believe Ozonate saved this man's life."

Now let us close with the exact words we used in the first edition of this book in 1916; they were applicable then, they are simply better established now. They are:

We here rest our case based on the facts accumulated by twelve years of work.

THE THEORY IS WELDED INTO A FACT. THE CHEMICAL STANDARD OF THE LIVING BODY IS RAISED. THE SUSTENANCE OF DISEASE REMOVED.

The responsibility now passes from us to rest upon the final judgment of that which we call the WORLD.

THE TREND OF THE PROCESS

We have been demonstrating with five diseases, all of a very fatal character; where is oxygen leading us?

The writer does not know and he is slow to speculate, but perhaps his views may throw some light on the case, especially as he has done much work that does not appear in this book; because the records were not properly kept.

We have seen it act very positively on syphilis.

We have seen streptococci quickly and positively controlled.

We have repeatedly seen it cure infectious colds.

With colds it requires very close attention from the physician who should see his patient twice a day as a heavy dose is necessary and the cold infections give way so quickly that the digestive troubles from overdosing after the germ elimination are very liable to occur if not very closely watched.

We have seen cancer give at least a sign that the oxygen was at work.

In the writer's judgment all germ diseases should be investigated; especially scarlet fever, measles, pernicious anemia and possibly typhoid. Typhoid would in all probability give way to intensified oxygen if the oxygen were used in the gaseous form, the way the animals were treated, but if the oxidized oils were used very great care would have to be exercised as the condition of the intestines would not allow of any digestive trouble.

We have repeatedly seen it, when persistently used in very small doses, from ten to twenty drops taken three times a day, do good work as a tonic.

However there is not much use of speculating, the cold fact is that the present accomplishments not only justify, but bid us explore every available field.

Never forget that it will eventually be found to have limitations, the position now is simply that we do not know the limitations—*may they prove to be far ahead of us.*

Do not be rash, do not jump at conclusions and claim everything; rather explore patiently and consistently; in such a field success is everything, time and work negligible.

Our reasons for naming certain diseases are more for the purpose of attracting attention to the great scope of the problem than that of forecasting their cure.

The reasons we follow in forming our judgment are too intangible for insertion in a practical statement of accomplished facts and yet they are the same as led to the choice of the diseases we have so successfully demonstrated with.

Data for such a course—there is none—unless we can call a belief in the dominant element data.

Justification—it lies firmly bedded in the fact that the reasoning has brought practical success.

THE FUTURE OF THE PROCESS

The past influences the future and as we look back upon the experiences of these twelve years of hard, discouraging work we recognize how difficult it is to write as one who has not encountered such a past.

However our duty is plain, we are here to demonstrate the power of oxygen and within this duty lies nothing to justify our utilizing our work for the purpose of placing our personal experiences before the reader.

Perhaps the statement that our work is revolutionary and would require the physician to admit that all his vast accumulation of knowledge must now be thrown aside has been made, in criticism of these experiments, more frequently than any other single comment. The writer thinks it necessary to plainly state that this is neither his opinion nor the opinion of any of those who thoroughly understand the work.

Plainly stated, the fact seems to be that we have worked a step farther back in the chemistry of life than those who have preceded us.

The physician deals with his serums, his antibodies and his phagocytes while we deal with the elements of which they are composed. Given the proper proportion and action of the elements of which the body is composed and the serums, the antibodies and the phagocytes must come as a natural result and in greater force.

The revitalized body must respond in this respect as the depressed or depleted body cannot and this is one of the great points that our experiments prove.

When this work is understood it will be found that it has been carried by deductive reasoning from a conception of Nature's design to a definite experimental conclusion.

We have said that the lights and shadows of a long, hard struggle would pass across these pages and we have also said that we would see that the shadows would only appear when they could aid the work; they must now appear.

In connection with these thoughts there is one and only one fact that we shall place before you and it without comment, for it needs none.

The first edition of this book was written as an appeal to the physician to aid us in demonstrating the practicability of the oxygen process on human beings.

The book was sent to over eight hundred and fifty physicians in all branches of the profession.

Of these eight hundred and fifty odd physicians *not one* came to our aid.

The writer is a practical man and believes in facing facts as they exist.

In giving the twelve most productive years of his life to this work he has, among other things, sacrificed the opportunity of becoming a wealthy man and it now behooves him to take stock of just what he has accomplished, the price he has paid and what the future holds for his work.

We do not speak of the past in a complaining sense—it was our choice.

On the other hand if the world rejects our effort it must also accept the consequences.

Having both made a free choice we must both accept the fruit of our planting, be it bitter or sweet; if your child dies of pneumonia or tuberculosis and you have sat inert as these facts passed before you, the blame is yours, not ours.

It is not pleasant to so write, especially for the eyes of a stranger; that we refer to such matters is solely for the purpose of plainly placing before the reader the necessity for thought and action on his part.

If we were to write the plain truth that passes through all these years, continuously, as a scarlet thread through cloth, the reader would not believe it possible in this twentieth century.

To oppose a reasonable proposition, especially when accompanied by strong proof, through prejudice, or because it comes from an unexpected, or ignored, source, is, in science, the unpardonable sin—one too often committed and never defensible.

We carried our animals and the problem of the different forms of oxygen, to the limit of our facilities; we have carried our work with the human beings to a complete and logical conclusion; we can go no farther and so we reach the crisis.

The ideal way to develop and put to practical use the power of oxygen for the control of avoidable suffering and death, would be to have a fully equipped institution which would be self contained and only responsible for what happened within its organization.

The past does not encourage us to hope for such a result.

Another and a very practical course, would be to turn this work over to one of our universities, as they have, or could obtain, all the necessary facilities; and no university can afford to ignore the renown that would come to it, if it successfully developed the power of oxygen.

With the one hand they would reap a wonderful charity, with the other prominence for their institution.

It would also be perfectly feasible to have the work become self supporting.

With this idea in view we will take these questions up with the responsible representatives of any reasonably well equipped university.

We will place no unreasonable restrictions upon the proper development of such a course; our main question will be—Can you carry it through and will you?

We have decided to take this course because we fully recognize that we are not able to carry the work alone; we will give all the assistance that we can, but to go farther alone, under the existing conditions, is impossible.

In furtherance of this offer this book will be particularly circulated among those connected with our educational institutions.

These experiments will be looked upon by different men in different ways—what one accepts another will reject—that is human nature but fortunately there is one point where we must all agree and that is upon the tendency or, better still, *the consistency of the proofs.*

Commence with the animal experiments, pass through them understandingly and then study the human cases and you will find in all this great mass of accumulated data no place where oxygen has injured and no place, where it had any show whatever, that it did not leave in one way or another, its beneficial mark.

When it is once studied to such a point of thoroughness it becomes incontrovertible and it is well worthy of such study.

THE MAKING, CHARACTERISTICS AND PROPERTIES OF THE SO-CALLED OZONATES

The writer is very much opposed to the publication of this matter, as it will undoubtedly lead to the use of these materials by the so-called patent medicine vender, or, what is equally bad, the making of them by careless or unskilled persons and so lead to ambiguous or deleterious results which will reflect upon the process.

We publish them because our critic will have nothing else.

We have pledged ourselves to take no personal profit from our work (see Preface to First Edition), but we are not believed and so our hand is forced by those who under no circumstances will ever be of any use in the development of the process; by those who largely judge others by their own standards. For like reasons we have taken out no patents. The reverse of what we now do would be the proper course to follow.

The responsibility for this condition should be placed where it belongs—upon those who consistently refuse to study the process and consistently prejudge it as of no value—but the responsibility will not be placed upon them, rather it will be cited against us.

So much for the conditions we find; having decided to submit we will give a full and accurate description of this branch of our work.

The manufacture of these oxidized compounds requires a great deal of experience and care. They are made by the blowing of so-called ozonized air through the oils under conditions which vary with each oil used as the carrier of the intensified oxygen; if a uniform product is to be obtained, *the machinery operations must be uniform, varying voltages, varying speeds, varying temperatures, in fact any varying factor must be controlled and made right and uniform.*

A thorough understanding of the problem involved in the question of the different forms of the element, which is explained in the first edition, is necessary to the successful oxidation of an oil for these purposes.

In the oxidation of oils a portion of the oxygen atoms are utilized to oxidize, and so remove, a portion of the carbon and hydrogen while other oxygen atoms combine with the oil, probably taking the places in the molecular ring which have been vacated by the carbon and hydrogen atoms, which latter have been removed by oxidation in the form of carbon dioxide (CO_2) and oxidized hydrogen or water (H_2O).

Oxidation always tends towards insolubility so that if an oil is over oxidized it would become insoluble or inert within the digestive tract and so would be incapable of delivering its excess oxygen to the blood.

It is and must remain a long cry from the making of a certain form of intensified oxygen, the combination of it with the oil molecule, the transmission of the special form to the blood and through the blood into opposition to the disease. One that none of us may follow in detail and probably never will.

An oil oxidized by the ordinary oxygen of the air may do the work as well but deductive reasoning says that such is probably not the case else those food values especially rich in oxygen would long since have been stumbled upon as having curative powers.

Nature adjusts oxygen to the normal human being, or him to it. She cannot step aside for the weakling else she ruin the whole structure, so we must either intensify the element or intensify the individual's capacity for combination with it.

A catilizer might be introduced into the diseased body; or a changeable oxide; such courses are within reason, but not within the range of our facilities.

There is sound reasoning on both sides of these deep questions; they require experimental demonstration.

The problem is to vitally oxidize, the means are open to various courses, the accomplishment to one.

We first used oxidized olive oil. It was used in the Bright's disease cases we give.

We later changed to oxidized cod liver oil and are now developing oxidized cocoa butter which bids fair to be the best of all yet tried, but our work on it is not yet complete and so cannot be here described.

We now give the combustion analyses of olive oil both before and after oxidation.

Combustion analyses of this class are rarely, if ever, accurate when made by the ordinary methods; on account of the great inflammability of the oils, we have developed a special apparatus for this work which we will gladly explain when necessary.

Olive oil before oxidation:

	Per Cent.
Carbon	74.37
Hydrogen	11.37
Oxygen	14.22
Nitrogen	.04

The same oil after oxidation:

	Per Cent.
Carbon	67.21
Hydrogen	9.98
Oxygen	22.75
Nitrogen	.06

The oxygen is increased 8.53 per cent. at the expense of the carbon and hydrogen and this increase is what we call "available oxygen." The 14.22 per cent. of oxygen contained in the natural oil is what we call normal oxygen and as such is incapable of utilization for our purpose.

The above is a type analysis; other oils will not vary from it in principle.

Take a wide mouthed bottle of proper capacity, fill it two-thirds full of olive oil and, by means of a glass tube of say three-eighths inch bore passing through the bottle neck and down to within one inch of the bottom of the oil, blow the ozonized air through it very hard, just as hard as possible without throwing too much of the oil out; keeping the oil uniformly at a temperature of 56° C., the oil will be oxidized to the proper gravity in about ten days or two weeks.

Italian olive oil seems to be necessary.

Olive oil has a specific gravity of about .915. We oxidize it to a specific gravity of .985 which gives close to eight and one-half per cent. of additional oxygen.

Unfortunately olive oil is only oxidizable with the intensified forms of oxygen at a temperature at which it is also oxidized by the ordinary unchanged oxygen of the atmosphere passing through the oil with the intensified forms.

As only a small portion of the twenty-two per cent. of oxygen in the atmosphere is changed to the intensified form it is impossible to evade blowing a mixture of the intensified and the normal element through the oils.

This fact led the writer to search for an oil that could be oxidized without combining any of the ordinary oxygen with it; this he found in cod liver oil.

At ordinary room temperatures, about 70° F., cod liver oil will not oxidize with normal air but is strongly oxidized by the intensified forms of oxygen; it can be so oxidized in from forty-eight hours to five days, dependent largely upon the speed of blowing and the quality of the gas.

Always blow hard, it is a part of the process.

The loss of oil can be prevented by a large bore glass tube about two feet long and as large as the bottle mouth, which should not be less than one and one-half inches, closely fitted to the inside of the bottle neck and extending upwards; the oil will catch in this tube and flow back into the bottle so that very little will be lost.

The specific gravity of cod liver oil is .925. We oxidize it to exactly 1.000.

To test the finishing point take a drop of the oil perfectly free from air bubbles and immerse it in a beaker of distilled water. If it floats to the surface it is not sufficiently oxidized; if it sinks you have gone too far. It should lie suspended where you put it, or move *very* slowly either way.

Hydrogen has an atomic weight of	1
Carbon has an atomic weight of	12
Nitrogen has an atomic weight of	14
Oxygen has an atomic weight of	16

This means that as you uniformly remove carbon and hydrogen from the oil and replace them with oxygen that the specific gravity must increase in exact proportion to the oxidation attained and its utilization gives an absolute test of the percentage of oxygen added. (See note.)

We cannot give the reader much information in regard to the technical characteristics of the oxidized compounds as we know nothing with certainty in regard to the different forms of oxygen; still we can give some practical information.

NOTE:—Speaking entirely from the viewpoint of the chemist, it seems to me that much information might be obtained by a series of tests based on the difference in the specific gravity of the blood when tested both before and after its passage through the lungs. This for purposes of general diagnosis as well as for acquiring information of value in regard to oxidation. The precision of the results, due to the different atomic weights of the elements involved, could probably be used to great advantage. Skilled hands could make such tests by the quantitative weight method with very small quantities of blood.—J. T.

While the writer has been unable to do anything worthy of mention as regards the questions involved in the various forms the element is capable of assuming, yet the five years which have passed since the previous publication have to a certain extent crystallized his views and, while in no sense wishing to ignore any of the phenomena noted in the first edition, he wishes to make this statement in regard to the question:

He is inclined to the belief that the main controlling factor is the one of voltage. The element is, as it were, struck a terrific blow by the high voltage used, the blow probably varying with the intensity, quality and quantity of the electric current used. The atom may even have electrons added to or taken from it.

To the writer's mind it is possibly like this:

If you place your two hands together with the fingers and thumbs touching and the palms fully separated and consider this as the normal form of the element, then if a strong vibratory current were passed through your two arms the hands would twist, thus distorting the position in which they were placed; when the vibratory current is taken away they will return to the position in which you had originally placed them.

Perhaps this faintly represents the phenomena; we do know that these oxidized compounds go through some changes with time, which seems to be towards the normal.

We know from experience that they lose their power with time, although they do not lose their oxygen, and to practically meet this condition we have to make them anew every two weeks.

We also know that, especially in warm weather, they discolor slightly with time.

We know that when they are heated to a high temperature they discolor very heavily.

We know that this discoloration is dependent upon time and temperature, the higher the temperature the quicker and heavier the discoloration.

We also know that when they are kept in a cold refrigerator they do not discolor.

From the above it seems a fair presumption, as we find heat the source of the discoloration and as we know that heat is the almost universal accompaniment of chemical activity, to assume that the discoloration at ordinary temperatures is due to chemical activity within the oxidized oil molecule, it being indicated by heat discoloration, the heat being generated by whatever change is taking place as the atom returns to normal.

The oxidized oils should be supplied fresh and always kept in a refrigerator.

Oxygen is a terrific power. The reader has seen full much of this in its clash with such germ forces as have never heretofore been overcome, or certainly not as oxygen overcomes them.

This should mean that intensified oxygen compounds are hard to digest if there is no germ force present for them to encounter and that they will be readily digested if the germ force is present in sufficient quantity and we find this to be a well established fact in our work.

This characteristic causes oxygen to attend to its own diagnosis; if the physician is mistaken in regard to the case and there are no germs the patient becomes sick, involving both stomach and bowels.

In such a case use a quick purgative and after the patient has recovered proceed with more caution.

The applicability of the oxygen to a given case can readily be determined by the following procedure:

The first day give the patient about one hundred drops divided into three doses.

The second day one hundred and fifty drops divided into four doses.

The third day three hundred drops divided into five doses.

This will not cause sickness if watched and ceased if the patient complains.

If this course is taken and the patient does not regurgitate the oil for long intervals after taking (pay no great attention to regurgitation within one or two hours after taking) and no feeling of nausea or loss of appetite is found it is certain that the oxygen is required and it is then simply a case of finding the proper amount for the particular case.

If the germ attack is not heavy it is better to bring the dose up in a period of five days rather than of three in order to allow the patient to adjust himself to the dose. In many cases there is no time to waste in bringing up the dose.

These directions are intended for use in treating new diseases, for instance in pneumonia it would be better to choose one of our cases similar to the one to be treated and follow the dose we had used.

The character and the quantity of the germ present is the true criterion.

Care must be observed that sickness is not caused by too heavy doses after the germ is controlled or eliminated. When undigested oil is found in the bowel evacuations it is a true sign that too much is being used.

A small quantity of whiskey given with the oxidized oil capsules seems to materially aid in their assimilation.

We have been very careful to give the dose in all our cases and a close study of them will be of great value to those commencing the treatment.

It is hardly necessary to use the slowly increasing dose used in our earlier tubercular cases, as then the field was new and we moved forward very cautiously. A tubercular patient should readily reach the maximum dose within a month.

Come up on any case until they commence to speak of continually tasting the oxidized oil, then drop back, say twenty per cent. and hold the dose there until you decide either to increase or decrease the quantity used.

Do not be afraid to use it on the one hand, or on the other ever fall into the error of thinking it is just a little oil; it is a strong, definite power; used properly it will do its work, used improperly it will work harm. Again, it is better to give too little than too much. Keep the appetite vigorous; the oxygen impulse will bring it to such a point if skillfully used.

Those who decide to use it because it is harmless anyhow, or on the ground that perhaps it may do something, had, for the sake of their patients, best let it alone; it takes a level headed, decisive man to use it successfully, and it takes one who has studied the matter long and well and is convinced of the principles involved.

Doctor Sanger did not approach tuberculosis of the larynx to see what would happen nor did Doctor Fernandez force the oxidized oil down the little, suffocating child's throat with a spoon because it would probably be harmless; rather they stood there like pieces of tempered steel and dictated the situation.

EXPERIMENTS WITH OXYGEN ON DISEASE

BY

JAMES TODD, A.M.

FIRST EDITION

This Portion of the Book was first Published in 1916. It Covers the Theory, the Experiments with Animals and the Chemical, Electrical and Mechanical Problems Involved.

It Contains the Information upon which the Experiments with the Human Beings were Based and is Very Necessary to a Clear Understanding of the Principles Involved.

PUBLISHED BY THE AUTHOR
PITTSBURGH, PA.
1921

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By James Todd

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PREFACE TO FIRST EDITION

The animal experiments of which I write were commenced in April, 1909, and are still being carried on.

In November, 1911, the work had progressed to a point that clearly showed it to be my duty to develop it to the utmost and to make public the results.

I write this book for a double purpose; on the one hand to make public the results of these exhaustive experiments; on the other, to ask for the aid which must be given if they are to be of any practical value to those who suffer.

I would ask my readers to bear in mind my statement now made; that I come before you to demonstrate principles, not cures.

To consider my work as completed would be as much of an error as to cast it aside, but it should be borne in mind that the lack of success often apparent is due, not to the basic principles involved, but rather to our lack of knowledge in their application and our limited facilities.

Practically all of the inoculations and autopsies used were made by Doctor E. W. Willetts, then pathologist of the Western Pennsylvania Hospital.

The rather unusual plan I follow in the controlled form of this publication is fully explained in the chapter "THE FINAL TEST."

It will perhaps be apparent to the reader that instead of making my experiments secondary to their form of publication I have deliberately made the publication submissive to my plans for the development of my work.

I wish to be clearly understood as stating that I have no plan of any kind involving personal profit to me from this work.

JAMES TODD

PITTSBURGH, PA.,
April, 1916.

THE THEORY UPON WHICH THE WORK WAS BASED

It is not our intention at this time to deal in any detailed way with the theory which led to our undertaking these experiments, as to do so would be to provoke criticism and useless argument.

Our object is entirely restricted to a wish to place before the world the actual facts of our work so that judgment will be confined as much as possible to the facts, for it matters little, at this stage, how it was done so long as it has been done.

However, it would be both unwise and impolitic to undertake to explain the many and devious paths of the work without at least some statement of the underlying principles.

The tissues and the organs of the human body consist almost entirely of four elements, oxygen, hydrogen, carbon and nitrogen.

The food which maintains our bodies consists almost entirely of the same four elements; the air we breathe of oxygen and nitrogen.

Of these four elements two, hydrogen and carbon, are the two most prominent reducing agents within the chemical series. Oxygen is the one opposing power of reduction—oxidation—while nitrogen, the most mysterious of the elements entering into organic life, may well be an able assistant to oxygen.

Water is oxidized hydrogen, and carbonic oxide gas is but oxide of carbon.

Oxygen enters our bodies at both points of ingress, the stomach and the lungs, and it is of great significance that we find that nature chooses it as the only element to thus doubly enter our bodies. It has not been proved that nitrogen enters our bodies by the pathway of the lungs; neither has it been proved that it does not.

It is a fact of very great significance that nature, after she has expended the power of the elements derived from our food in maintaining our bodies, eliminates them always in combination with oxygen. The carbon comes out through our skin and our lungs as carbonic oxide, CO_2, the hydrogen as water, H_2O. Both elements are not only in combination with oxygen but are fully oxidized and are each held separately, as it were, in the grasp of their custodian and master, OXYGEN.

The simplest method of changing the condition of the organic chemical body is to change the ratio of any of these four elements, as by so doing we strike at the very foundation of life.

If the maintenance of the chemical equilibrium of our bodies is based by nature upon the broad foundation of oxidation and reduction, she would be operating upon very sound principles, easily within the comprehension of man, and which would fully justify us in calling oxygen the dominant element in organic life.

Under such conditions it might well be that when the living body is thrown out of its chemical equilibrium in such a way as to cause a slight predominance of the reducing agents, that it will lose its natural strength or power of resistance to disease.

Yet again, if such were to be the case and we were to re-supply that diseased body with oxygen in a form that is capable of entering and taking part in its chemical processes, we would restore the chemical equilibrium and react upon the attacking disease by removing, as it were, its sustenance; and further, if such is the case, a slight increase above the normal in oxygen would bring about a condition intensely vital both as regards force and accomplishment.

It is plainly apparent that we cannot hope to accomplish such ends by the use of normal oxygen, as either the living body or the oxygen will have to be intensified and, as it is a much simpler problem to intensify the oxygen we breathe than to undertake to intensify the living body, we use for our work so-called ozonized air, using it upon the ground that it is an intensified form of oxygen. So-called ozonized air would be far too powerful to use undiluted, so we use it by mixing a small, measured quantity with the air which is continuously blown into the rooms containing our animals.

As to whether we are right or wrong in our views and consequent deductions we will leave for the reader to determine from the results of our experiments.

IN EXPLANATION OF THE DRAWINGS USED

Before proceeding with the inoculated experiments it is necessary for us to give some study to both the animal we use and our methods of presenting the results of our experiments that the reader may be in a position to thoroughly familiarize himself with the work.

In studying such a problem as we have before us it becomes essential that we have some fixed standard by which to judge and for this purpose we have chosen the only one open to us, and yet the best possible one for the purpose—change in weight. Tuberculosis is a wasting disease and consequently the change in weight of the animals will be a reliable guide.

There are hundreds of animals that have passed through these experiments and to undertake to tabulate them by means of figures would lead to such a mass of data as would deeply, if not completely, obscure the result. We have therefore designed a number of drawings which enable us to determine the exact comparative history of each animal.

On the drawings which represent the weight changes, a curve is plotted for each animal, showing his weight at the time of inoculation and once each week thereafter. Each lateral space represents one week of time, while each perpendicular space represents one hundred grams. As the curve rises or falls it accurately shows the gain or loss in weight, while as it passes across the drawing it shows the interval of time by weeks.

When the animal dies the curve ends thus, ╳, with a cross placed on the drawing to show both the weight and time of death.

As some of the strongest proofs of the fact that oxidation has been accomplished and that the body has risen in its forces as a result of oxidation lie in the evidence obtained by first oxidizing certain animals before their inoculation, it becomes necessary to have a plain marking to indicate such animals so that the contrast is always apparent. In order to make this clear we mark all animals which have been oxidized before their inoculation thus, ⊕, using a circle with a plus mark across it.

For the natural animal, by which we mean the animal which has had no preliminary oxidation, we use the circle crossed by a minus mark, thus, ⊖.

It is necessary to understand these markings, for unless they are always kept clearly in mind it will not be possible to follow intelligently the proofs we submit.

Perhaps it will enable the reader to better understand the symbols if we explain their origin.

O is the symbol for oxygen, simply the first letter of the name.

When we take this symbol of oxygen (O) and place a plus mark across its face, thus, ⊕, we mean that we have oxidized the animal before using it while if we place a minus mark across the O, thus, ⊖, we mean that the animal has been utilized in its natural condition and we speak of them as the previously oxidized (⊕) or the natural (⊖) animal, as the case may be.

At times we refer to them as the O plus, or as the O minus, thus giving names to our symbols.

We will, from time to time, use drawings based on characteristics other than the weight changes which we will explain as we come to them.

For the purpose of studying the effect of different inoculations and different treatments the animals will be divided into many classes and combinations as we proceed and a tremendous problem will be unfolded step by step. It is better to have this problem develop gradually than to state it here, but we emphasize the importance of the ⊕ and the ⊖, for in their contrasts, beyond all doubt, lies the truth.

Instead of marking each experiment with a number or a letter, we have dated them at the time on which they were started, as this prevents a repetition of numbers and takes us always to the origin. EXPERIMENT 1–14–10, for instance, started January fourteenth, 1910, and is therefore spoken of as EXPERIMENT 1–14–10 or as the January Experiment.

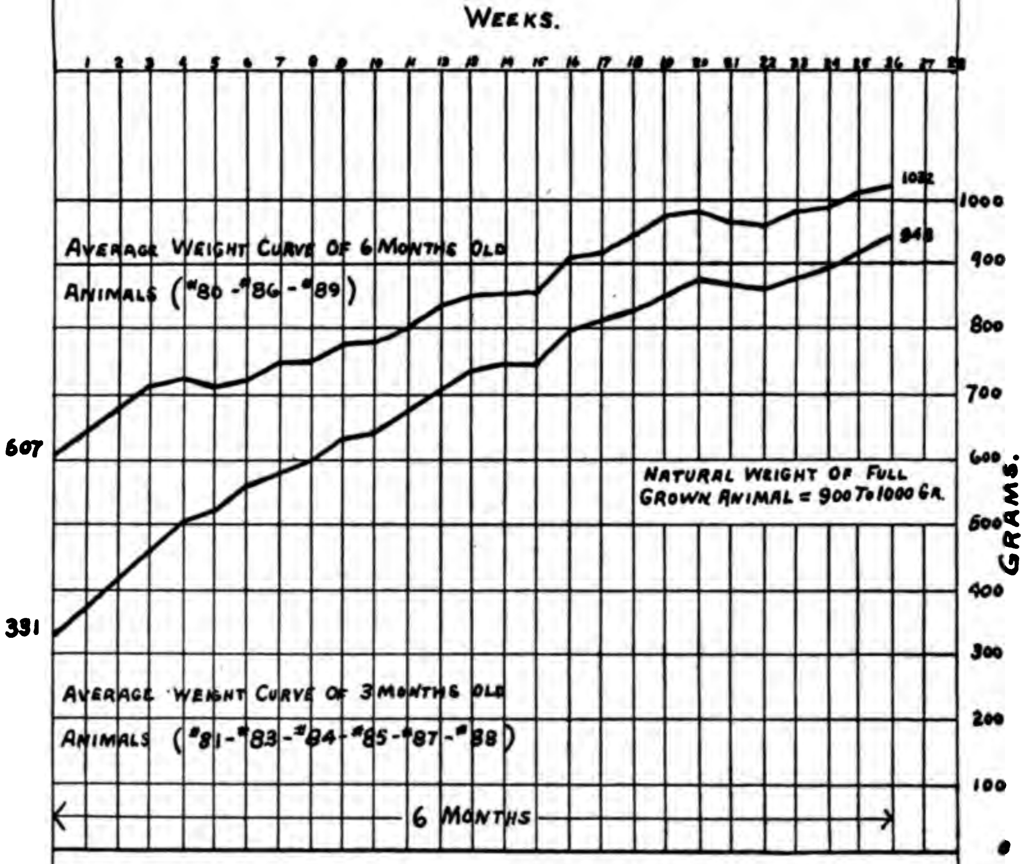
THE MALE GUINEA PIG

In order to intelligently handle our work it has become necessary for us to study the animal we use so freely, for we have never been able to find any reliable data in regard to him. This has been done from time to time as the work progressed and frequently in connection with the main problem.

Our opinion of the guinea pig, based on a good many years of close intimacy with him and covering both observation and experiment, is that he is a delicate animal, requiring close and intelligent care in order to be reliably used; a care very different from that which he generally receives. His full adult weight is about one thousand grams, and he reaches maturity in about one year and does not ordinarily live much longer.

On page 140 is a drawing showing the natural weight curve of the male guinea pig. Nine animals are used, six very young and three half grown. Note as the weight increases the curve rises and as time progresses, passes to the right, week by week.

We have here, taken from our record books, two strongly rising curves covering a period of six months, the younger animals approaching the curve of the older ones; the whole amounting to such a representation of health and progress as we would expect to see. This is the curve we shall establish and from time to time use, in drawing the distinction between health and disease, making use of that section or portion of the curve which corresponds to the weight of the animals we employ in demonstration. For instance, if we are comparing animals weighing about five hundred grams, we shall take the section of the lower curve on this drawing at four weeks, as it there corresponds closely to such weights.



SECTION OF
〈EXPERIMENT 11-10-10〉
LABORATORY BOOK #1 PAGE 93.

NATURAL WEIGHT CURVE OF THE MALE GUINEA-PIG.

Jas. Todd. JUNE 1911.

In this chapter the majority of the drawings used are based on the records made by the check or control animals. We distinguish between the check animal (whose record is always kept to show the development of the natural disease) and the animal placed under the conditions of accentuated oxygen, by speaking of the natural disease as unopposed tuberculosis, while those animals placed under the treatment are spoken of as opposed tuberculosis. That is to say the disease instead of following its natural course finds itself opposed by the force of oxidation.

THE CARE OF THE CHECK ANIMALS

All animals used in our experiments have been either young animals obtained from a reliable source and kept by us for several months before using, or animals raised by ourselves.

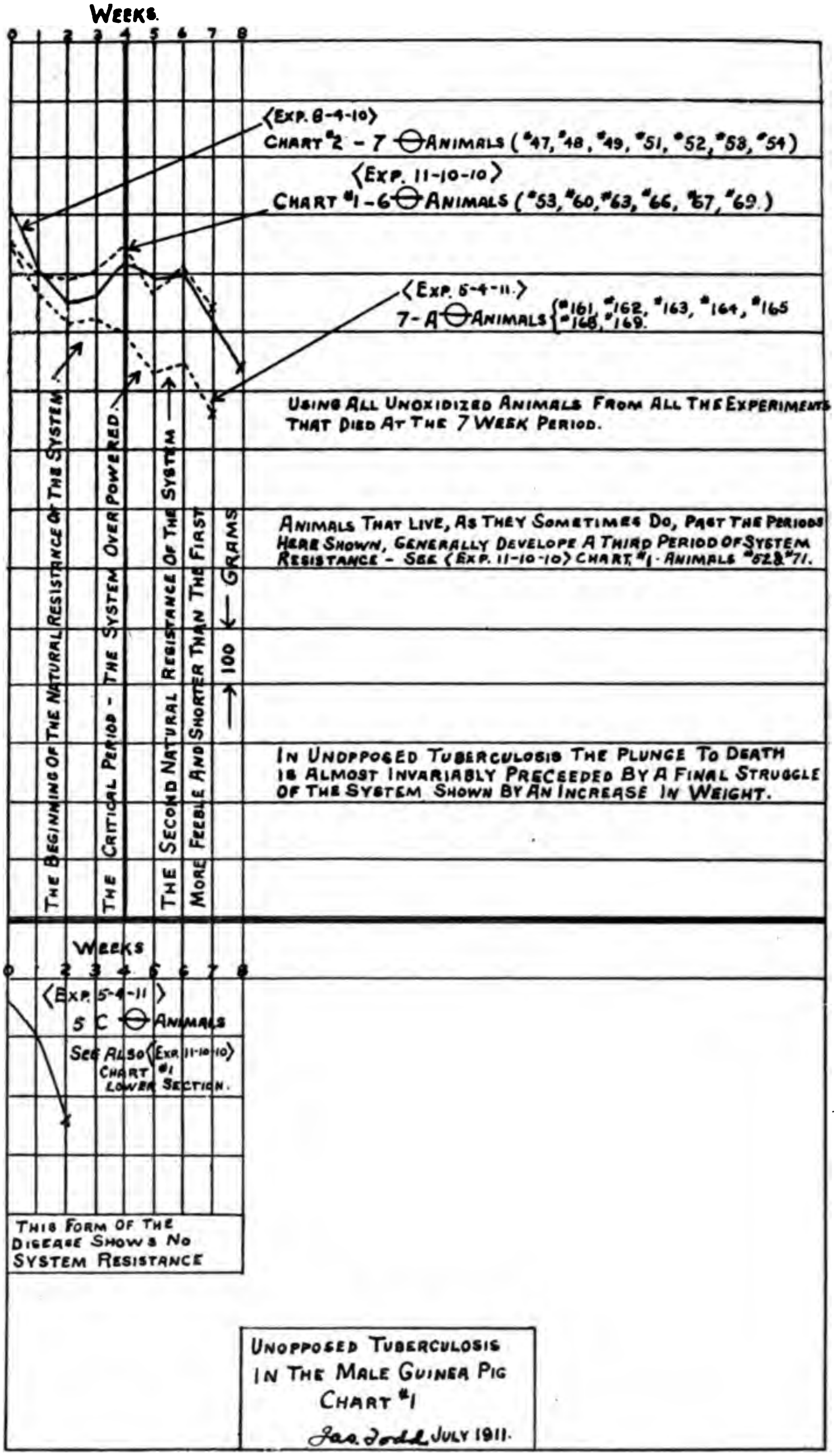
The check animals used in the first four experiments were inoculated in our laboratories and then immediately taken to the laboratories of a prominent hospital and kept under the care of others than ourselves. Later all check animals were kept in our possession in clean, well constructed outdoor cages containing warm, dry boxes for their protection.

With the exception of the first experiment, all animals have been inoculated identically; in the first experiment the number of germs varied with the size of the animal.

The check animals not in our care were fed, as nearly as we could arrange, identically with those under our treatment. The check animals kept by us were fed identically with those under our process.

UNOPPOSED TUBERCULOSIS IN THE MALE GUINEA PIG

We place on page 142 the drawing UNOPPOSED TUBERCULOSIS IN THE MALE GUINEA PIG—CHART NO. 1. This drawing shows



UNOPPOSED TUBERCULOSIS
IN THE MALE GUINEA PIG
CHART #1
Jas. Todd JULY 1911.

the clocklike precision of unopposed tuberculosis, that is, the natural course of the disease. The system resistances are clearly shown and particular attention should be given to the uniformity of the blow as indicated by the heavy line at the fourth week. The autopsies show this to be the time of general involvement of the vital organs.

EVIDENCES OF OXIDATION IN THE CHECK ANIMALS

We turn now to page 144, Evidences of Oxidation—Check Animals, Chart No. 1, and take up the question of whether it is possible and practical to oxidize the living body and if the results are beneficial.

This chart is based on what we call Common Root Charting, that is, each pair of lines start from a common point or root and then rise or fall as shown by their records in the laboratory books.

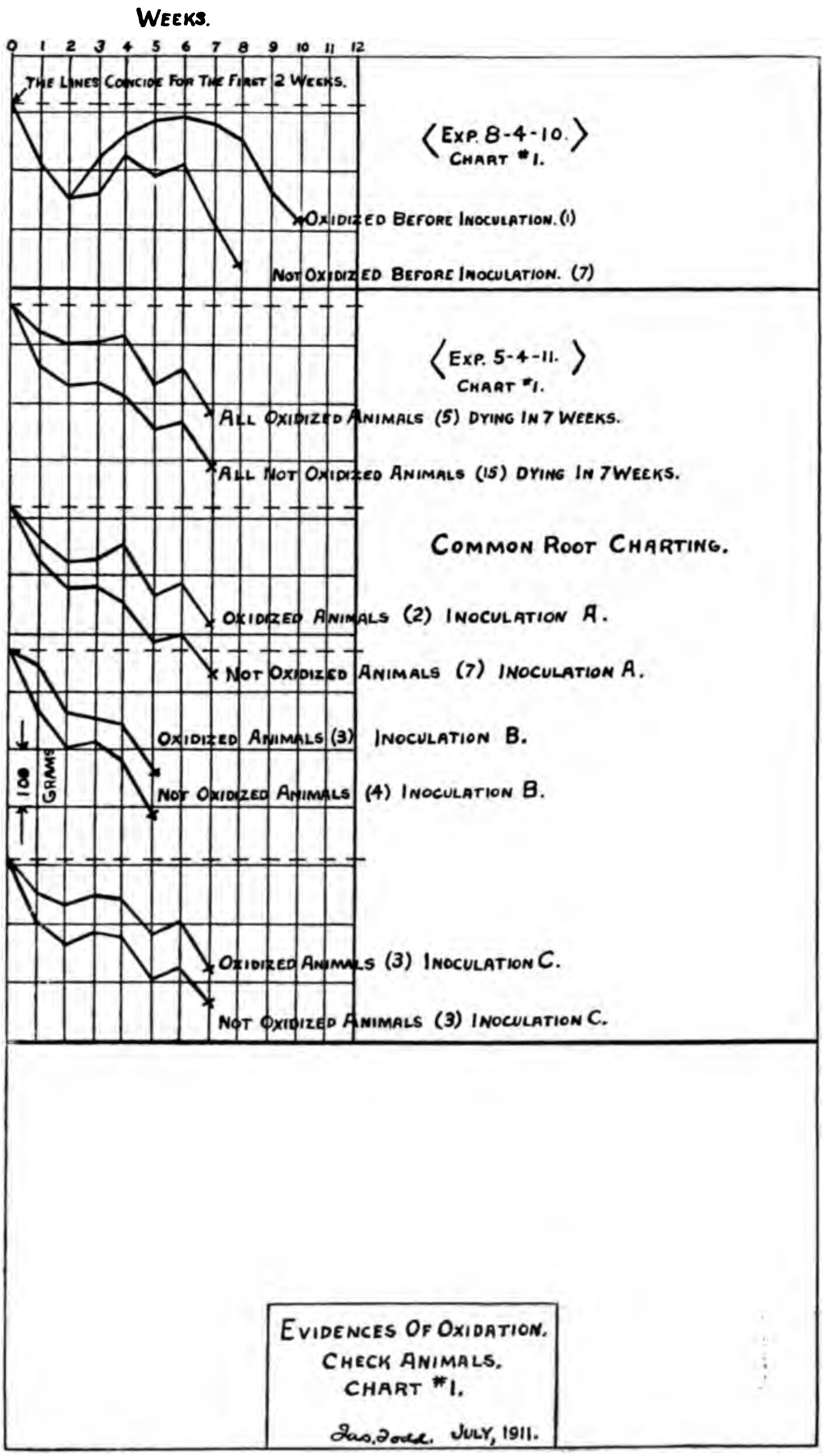
As it is necessary to chart together only such animals or groups of animals as die at the same time, notice that only small groups of animals, and not the same in number in each case, are charted together.

The effort has been to demonstrate with animals that die at seven weeks, as most of the deaths occur then and by that time the disease is fully developed.

On this drawing so explained we wish to draw attention to the fact that in each case the top curve is the weight changes of the animal oxidized before inoculation, *i.e.*, the ⊕ animal; while the lower curve, in each case, is that of the natural animal, *i.e.*, the ⊖.

As the curves start from a common point they show a clear and uniform distinction, in that the natural animal loses more weight before death than the one which has been previously exposed to accentuated oxygen.

While it is true that both must die because not exposed to oxidation *after* inoculation, yet the record is clear in that something has



Evidences Of Oxidation.
Check Animals.
Chart #1.

Jas. Todd. July, 1911.

happened to uniformly cause the oxidized animal to lose less weight, thus showing less strain and suffering.

Practical oxidation is here proved to have been accomplished without injury and the animals have shown greater resistance as a result.

This is the first example of the difference between the O plus and the O minus and it will be noted that the distinctions are decisive.

THE NATURAL ANIMAL LIVING IN ACCENTUATED OXYGEN

Before proceeding with the inoculation of the animals it is necessary for us to show that they can live and thrive under the conditions we intend to produce.

On the drawing on page 146 we place the natural weight curve of the animal and, below this, the curve of two animals carried, first in two per cent. of the so-called ozonized air, then in four per cent. and later again in two per cent.

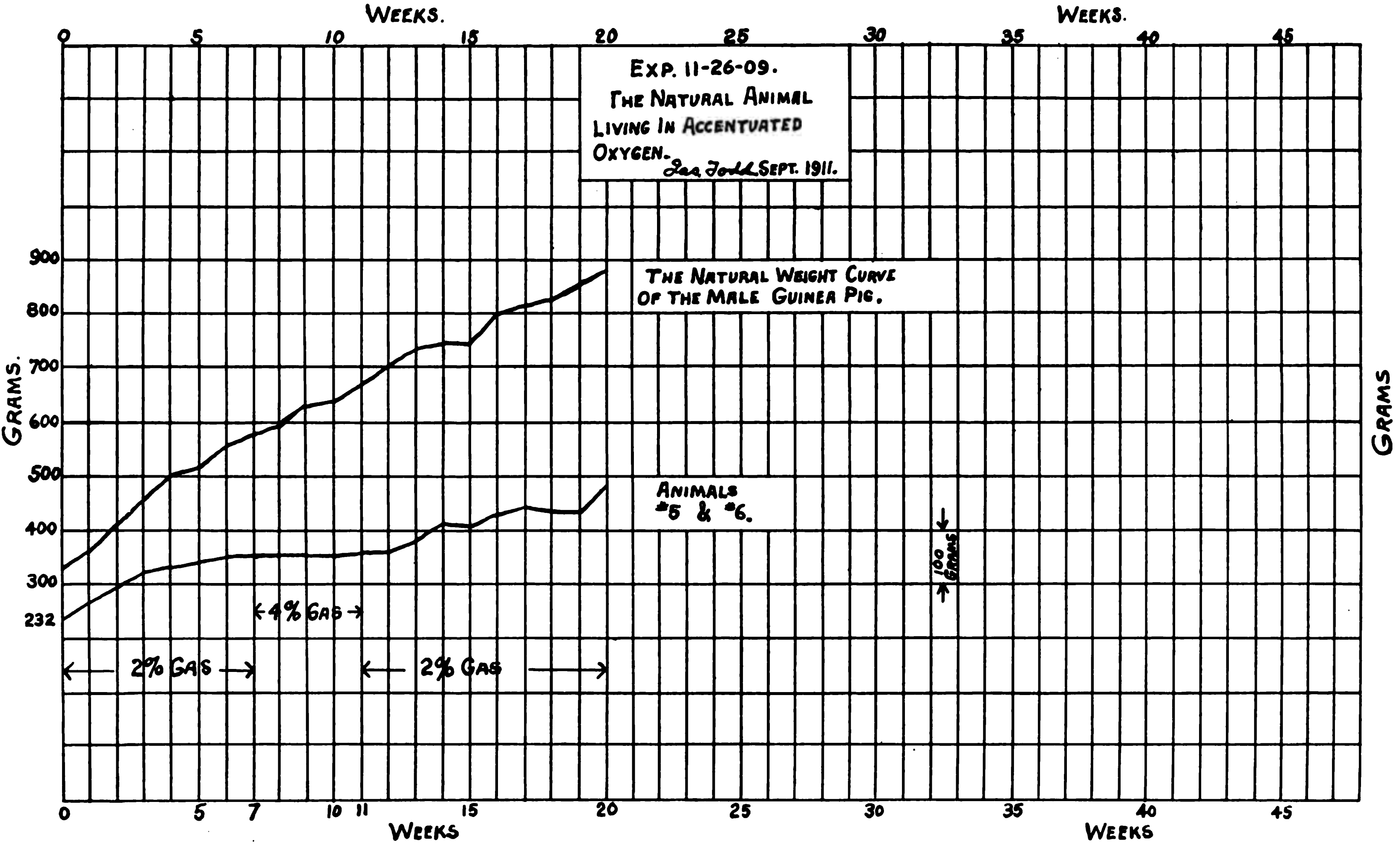
Note that the curve rises under two per cent.; neither rises nor falls when the gas is raised to four per cent.; and again becomes a rising line as soon as the gas is lowered to two per cent.

That the animals can and do live and thrive under such conditions is clearly shown both here and in the work to follow.

Before taking up the experiments with the inoculated animals it is necessary to explain how we brought them in contact with the intensified oxygen.

On page 309 will be found a drawing and explanation of the mechanism used; this drawing should be examined at this stage. The animals were placed in cages in small rooms specially designed for the work. A blast of pure air, varying in quantity according to the size of the room, was blown into each room.

By the mechanism above referred to the pure air was mixed with an accurately measured quantity of so-called ozonized air just as it entered the room.



EXP. 11-26-09.
THE NATURAL ANIMAL
LIVING IN ACCENTUATED
OXYGEN. Jas. Todd Sept. 1911.

The percentage of "ozonized" air which was mixed with the blast of pure air varied in the different experiments. The lowest amount was one per cent., the highest four per cent.

"Ozonized" air contains very small quantities of the intensified form of oxygen so that only a very small fraction of a per cent. is continuously delivered to the animals, the intensified oxygen entering their blood through their lungs.

Bear in mind that when we speak of using a certain percentage of gas we mean *"ozonized" air, not "ozone." Never confuse the two.*

Most of the experiments are preceded by a drawing showing the plan in detail; these plans should be closely studied before taking up the results.

THE FIRST SECTION OF THE ANIMAL EXPERIMENTS

EXPERIMENT 1–14–10

THE JANUARY EXPERIMENT

This, the first inoculation experiment, was made without any definite plan other than to inoculate the animals with the tubercle bacillus and expose part of them to intensified oxygen in the belief that the ones so exposed would show the benefit of their experience.

The number and virulence of the germs used is unknown but was excessive, as shown by the fact that all the check animals died within a few days.

The inoculation was made subcutaneously in the abdominal region and in this experiment we used a varying quantity of the inoculating fluid, using slightly more on the heavier animals than on those that were lighter in weight, a system which we abandoned after this experiment.

In all we inoculated nine animals, four check animals and five placed under the treatment.

Of the check animals, three were inoculated with the full quantity of inoculating fluid, but the fourth was given a smaller quantity, as the inoculating fluid gave out.

Of the four check animals, the three heavily inoculated ones died, one each day, so that all were dead in four days. The lightly inoculated one lived for nine days.

There are no autopsies of the check animals because they did not live long enough to have their organs attacked. In each one the tubercle bacilli were found where they had been placed.

Eliminating the lightly inoculated check animal for that reason, we have the plain fact that all the check animals died within a few days after their inoculation.

Now turning to the five animals inoculated and placed under intensified oxygen, we find that they were divided into two classes, as three of them were previously oxidized, to raise their forces by the power of intensified oxygen before their ordeal, while the other two were natural animals.

We here again meet the distinctions that are shown by the two classes of animals, the ⊕ and the ⊖ (the O plus and the O minus), the body prepared for its ordeal by preliminary oxidation as compared to the natural animal passing through the same ordeal, and we would again call attention to this phase of the work so that the distinction between the two classes of animals may be fully appreciated, as in this lies the very pith of the questions involved.

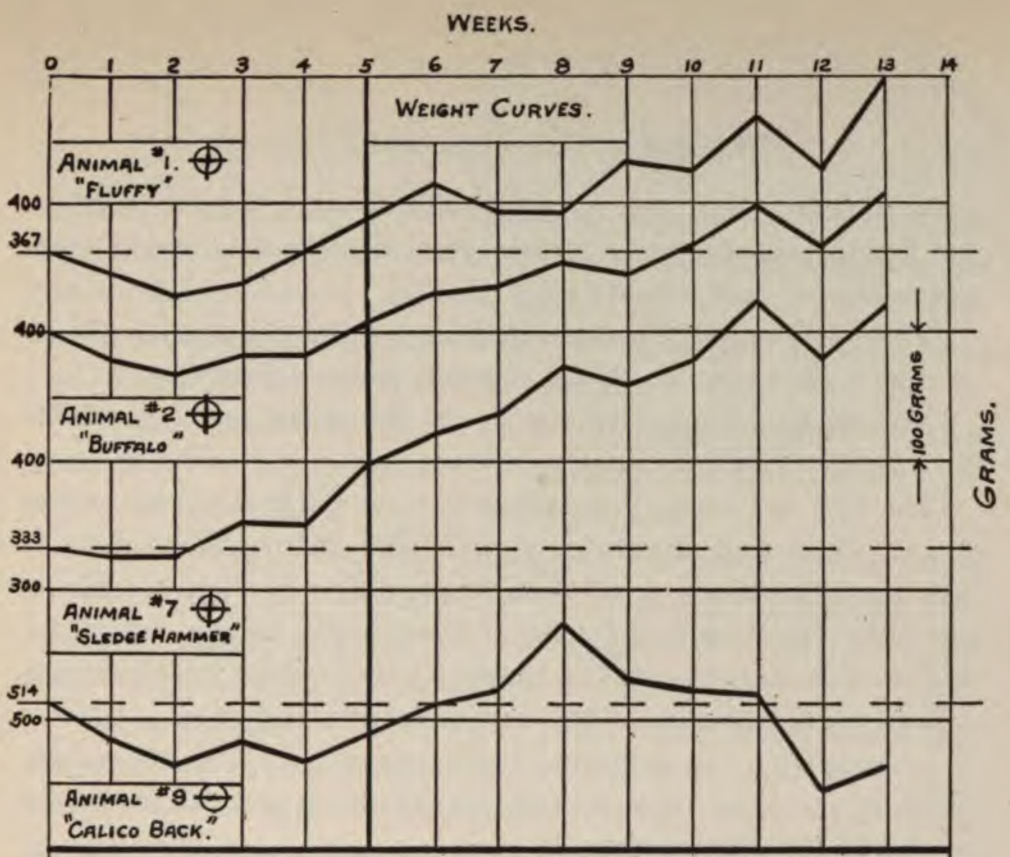
Of the two natural animals, one died fourteen days after its inoculation. Noting that this natural animal lived fourteen days under the treatment as compared to the death of the check animals within four days, we will take up the drawing EXPERIMENT 1–14–10, ANIMALS UNDER TREATMENT, page 151.

On the upper section of the drawing we have placed the weight curves of the four remaining animals for the period of thirteen weeks at which time they were chloroformed and extensive autopsies performed.

On the lower section of the drawing we have placed the results of the autopsies. The markings used are all explained on the drawing.

Returning to the weight curves, we find that the three upper animals, No. 1, No. 2 and No. 7, are the previously oxidized ones, marked with the sign ⊕.

Bearing in mind that the check animals all died in a few days, we see these animals lose weight heavily for two weeks after their



AUTOPSIES.

ANIMALS CHLOROFORMED AND AUTOPSIED 3 MONTHS AFTER INOCULATION.

Nº	GLANDS NEAR INOCULATION POINT	GLANDS GENERAL	SPLEEN	LIVER	KIDNEYS	LUNGS	BRAIN	CHANGE IN WEIGHT	CONDITION OF BODY	IS TUBERCULAR HEALING PRESENT?	
1	o	o	o	o	o	x	o	+130	GOOD	YES	⊕
2	o	o	o	x	o	x	o	+102	GOOD	YES	⊕
7	xxx	o	o	o	o	x	o	+187	GOOD	YES	⊕
9	xx	x	xx	xx	o	x	xx	- 59	POOR	YES	⊖

ANIMALS #1-#2-#7 WERE
OXIDIZED FOR 50 DAYS BEFORE
INOCULATION UNDER ⟨EXP. 11-26-09⟩

ANIMAL #9 - A NATURAL ANIMAL.

x = ORGAN INVOLVED.
xx = ORGAN HEAVILY INVOLVED.
xxx = CASEATION PRESENT.
o = ORGAN NOT INVOLVED.

EXPERIMENT 1-14-10.
ANIMALS UNDER TREATMENT.
Jas. Dodd: FEBRUARY 1913.

inoculation and then move forward with a strength that is marvelous and that proves, beyond question, that some force is within them and acting for their benefit.

That the power of the intensified oxygen has uniformly acted on all alike is shown by the close conformity of the weight curves.

Now we will compare animal No. 9, the natural, or ⊖ one, with the three previously oxidized, or ⊕ ones.

The first noteworthy comparison that we will make in his case is that the check animals, having no intensified oxygen to aid them in their battle for life, were all dead at the end of four days, ***while he lives to be chloroformed at the end of three months,*** as thus he proves that the process holds hope of success for those which have not been exposed to its power before the disease has attacked them.

In comparing this natural animal's weight curve with the weight curves of the other three, we find that many distinctions are shown in favor of the three ⊕ animals.

At the first glance we see that his curve does not keep up parallel to the others; it being a much weaker effort than the ⊕ ones.

In further studying the details of his curve we find that while the power of the oxygen started him upward during the third week in common with the others, yet he did not hold his gain, as shown by the fact that he lost weight during the following week and undoubtedly he lost his fight at the eighth week and could not have lived much past the time when he was chloroformed, and at the end of his life weighed much less than when inoculated, as compared to exceedingly heavy gains in all the ⊕ ones.

Much might be here said in regard to the distinction between the weight curve of this natural animal and those of the three which were prepared for the ordeal by first deliberately exposing them to the power of intensified oxygen, but we would rather at this time allow the reader to draw his own conclusions, simply stating that this undeniably clear evidence is maintained through the records of the hundreds of animals that will be shown as the work progresses and the problem commences to assert itself.

On the lower section of this same drawing we have placed in tabulated form the autopsies of the four animals.

We believe that the simplicity of the design by which we show these autopsies renders detailed explanation of them unnecessary and so will leave them to speak for themselves.

Animal No. 7. The abscess formed at the point of inoculation in this animal had not opened at the time of chloroforming him, which fact accounts for the heavy involvement at this point; the abscesses in the others had opened some time before.

The autopsies show that all the animals were lightly involved in the lungs; in the ⊕ ones there was no other evidence of the disease, except that it was lightly present in the liver of No. 2 and in the abscess above referred to in No. 7.

The autopsy of No. 9 shows practically all of his organs heavily involved and that he had lost fifty-nine grams in weight, as compared to the heavy gains shown by the ⊕ ones, which gains average one hundred and forty grams to each of the animals.

We would call attention to the fact that tubercular healing was found to be strongly and repeatedly present in each of these four animals, ***thus proving that the power of intensified oxygen not only can oppose the power of the tubercle bacillus, but can also force it from its prey and heal the organs it has ravaged.***

⊕ 4 Oxidized Animals. #1 To #4 1% Gas. ⊖ 6 Natural Animals. #5 To #10	⊕ 4 Oxidized Animals. #11 To #14 2% Gas. ⊖ 6 Natural Animals. #15 To #20
⊕ 4 Oxidized Animals. #21 To #24 3% Gas. ⊖ 6 Natural Animals. #25 To #30	⊕ 4 Oxidized Animals. #31 To #34 4% Gas. ⊖ 6 Natural Animals. #35 To #40
⊕ 3 Oxidized Animals, #41 To #43 Check Animals. ⊖ 11 Natural Animals. #44 To #54	⟨Exp. 8-4-10.⟩ Plan Of The Experiment. 54 Animals Divided Into 10 Sections. Object Of The Experiment. Different Quantities Of The Gas Acting On A Light Inoculation. Inoculation 1000 Tubercle Bacilli Of Human Origin. Preliminary Oxidation For ⊕ Animals 1% Gas 1 Week – 2% Gas 7 Weeks, Oxidized Under ⟨Exp. 6-6-10.⟩ R.B. Page #3. Record Book Pages #5 To #37 Inclusive. Jas. Todd Sept. 1911.

EXPERIMENT 8-4-10

THE AUGUST EXPERIMENT

In this experiment we have endeavored to bring system and a well-considered plan into our work that we may accomplish as much as possible and, at the same time eliminate, as far as possible, errors and the consequences of poorly considered plans.

On page 154 we place the full plan of the experiment.

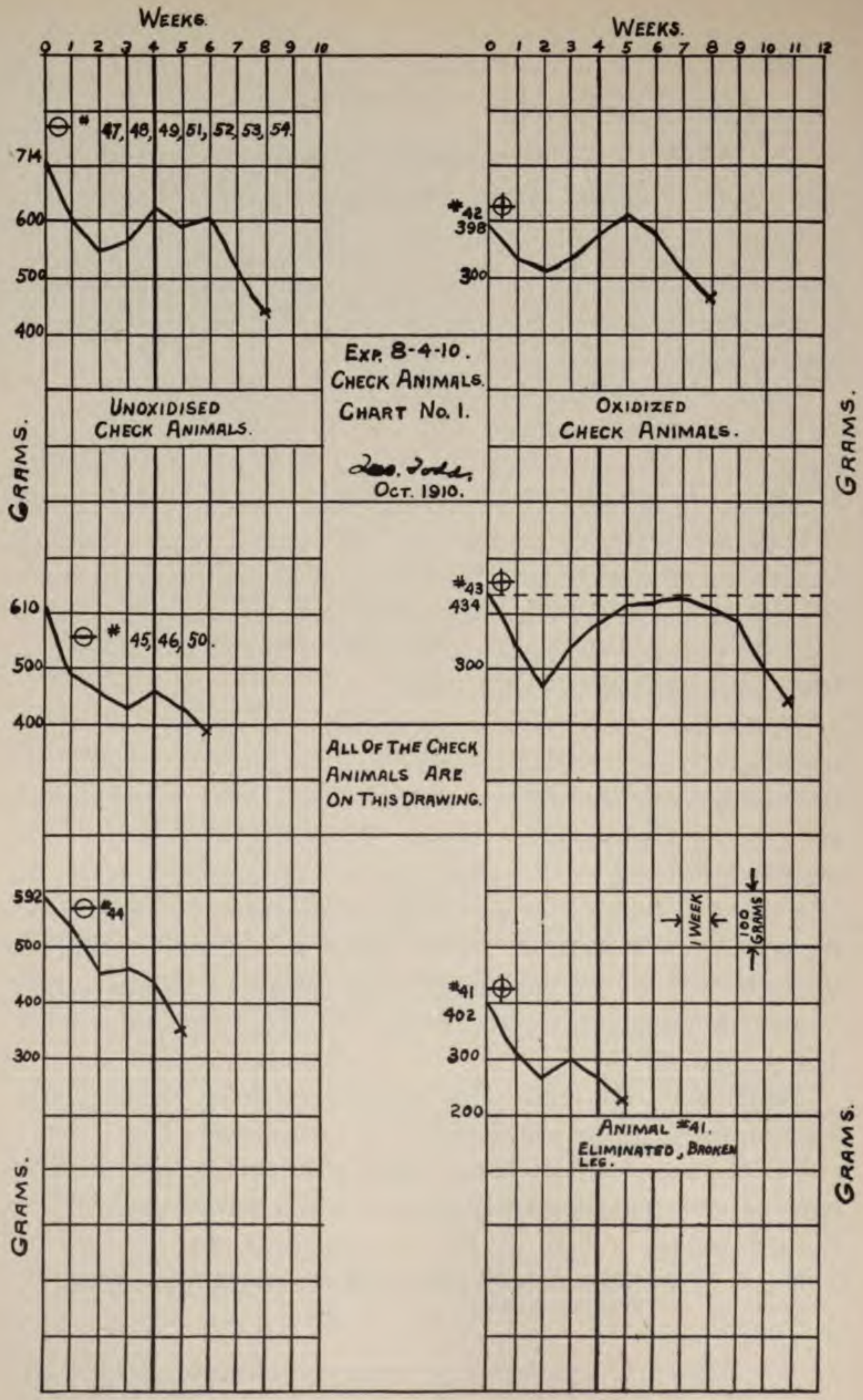
The experiment involved fifty-four animals divided into ten sections and was designed for the purpose of determining the effect of different quantities of the oxidizing gases as well as the carrying of both the previously oxidized and the natural animals through all sections of a much larger and more comprehensive experiment than the January one. All of the details of the experiment are shown upon the plan and should be given close consideration. The inoculation was 1000 T.B. to each animal.

At the very start a mistake was made that has cast a shadow upon this otherwise very conclusive experiment; the doctor who performed the inoculations misunderstood his instructions, which were to inoculate the animals just under the skin in the abdominal region, thus securing a fostering point for the germs to spread from, but instead of so doing he injected the germ solution *into* the abdominal cavity; the germs, few in number, became scattered and, while killing all the check animals, did not cause definite tubercular lesions, so that we have no autopsies clearly showing the check animals to have died of tuberculosis.

Fortunately, there are other ways of attaining the necessary information, which we will state in their proper place.

Leaving the plan, we will now take up the results attained, commencing with the check animals, all of which are shown on Chart No. 1, page 156.

There were eleven natural check animals which are marked ⊖,


Weeks.
0 1 2 3 4 5 6 7 8 9 10
Weeks.
0 1 2 3 4 5 6 7 8 9 10 11 12
# 47, 48, 49, 51, 52, 53, 54.
714
600
500
400
#42
398
300
Exp. 8-4-10.
Check Animals.
Chart No. 1.
Geo. Todd,
Oct. 1910.
Unoxidised Check Animals.
Oxidized Check Animals.
Grams.
Grams.
610
# 45, 46, 50.
500
400
#43
434
300
All Of The Check Animals Are On This Drawing.
592
#44
500
400
300
1 Week
100 Grams
#41
402
300
200
Animal #41.
Eliminated, Broken Leg.
Grams.
Grams.

both on the plan and on this drawing. In addition to the natural check animals, the plan shows three previously oxidized check animals marked with the sign ⌖.

The experiment carried nineteen of the ⌖ animals in its different sections. They, in their preliminary oxidation, were exposed to one per cent. of the so-called ozonized air mixed with ninety-nine per cent. of pure air, the mixture being blown continuously into the room in which they lived for one week and then the "ozonized" air was increased to two per cent. for eight weeks.

Their full curve during their period of preliminary oxidation is given on Chart No. 4, page 163.

The method followed in oxidizing all the animals used in all of our experiments, has been to procure enough animals for the full experiment and keep them in good, clean, well-ventilated pens for not less than a month and generally several months, until they were mature enough for our purpose and known to be perfectly healthy.

They were then divided impartially into two groups. One of these groups would be then oxidized for from eight to ten weeks, while the other group would be kept away from the vicinity of the oxidizing gases.

In all cases the feeding and cleaning of the animals were identically the same for each group and great care was taken that no factor should vary in the two groups excepting the one of oxidation, *and no other factor did vary*.

We have here gone into full detail that this question may be fully understood.

Returning to our drawing CHECK ANIMALS—CHART NO. 1, page 156, we find on the left side of the drawing all the natural check animals and on the right side the three oxidized, or ⌖ ones.

It will be noticed that the eleven natural check animals are shown by means of three weight curves, the top curve consisting of seven animals, the middle curve of three and the lower curve of one animal; this is because animals dying at different periods cannot be charted together, as the lines would falsify themselves.

Animal No. 41, ⊕, on lower right side of drawing. This animal's leg was broken when inoculating it and for that reason we eliminate it from further discussion.

There are cases of elimination of animals in the work necessarily caused by the large number used; they are few and the record of each one is given in its proper place.

A glance at the drawing is sufficient to show that there is a great difference between the curves of the ⊖ and the ⊕. The greater strength of the ⊕ ones is shown by their complete recovery of the weight lost in the first two weeks after inoculation, while none of the ⊖ come any way near this attainment.

It cannot be denied that here we find the previously oxidized check animals, which have been deprived of the intensified oxygen since the time of their inoculation, showing exactly the characteristics that we found in the ⊕ animals carried in the previous experiment—greater strength and greater recuperative power, and this is exactly what the proper form of oxygen properly placed in their bodies should do.

Turning to CHART NO. 2—COMPARISONS, page 159,[1] we find a new method of demonstrating, which we call "common root charting" and which requires a word of explanation, as we frequently use it.

In this method of demonstrating the results, the curves are started from a common point and from that point rise or fall each week in accordance with the weight changes of the animals and the separation of the curves is what tells the tale.

On the upper part of the drawing we bring into comparison the oxidized check animal which made the best record and the average

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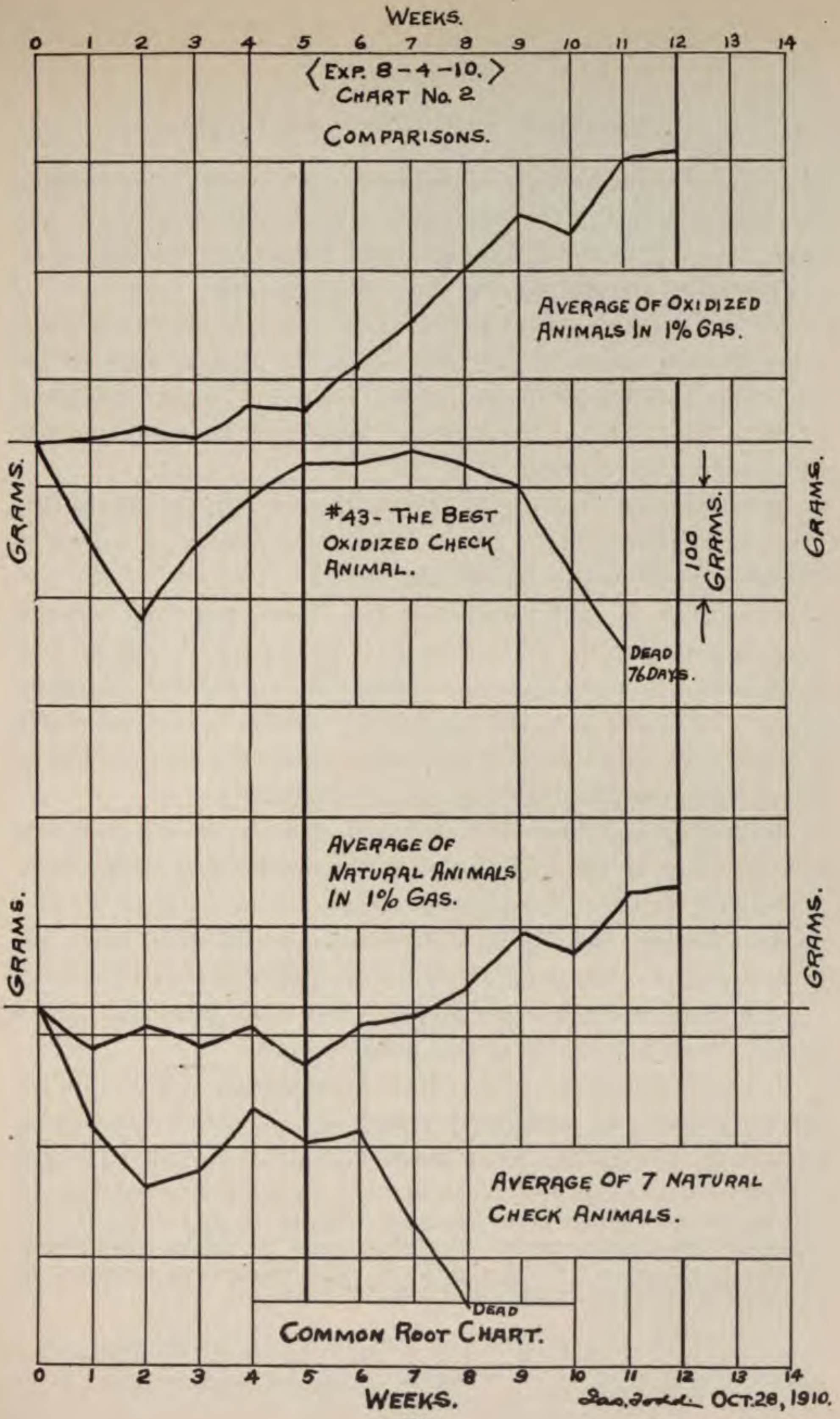
[1] The reader will please note that when we speak of using two per cent. of gas, or two per cent. of "ozone," that we mean a given percentage of "ozonized air."


WEEKS.
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
⟨EXP. 8-4-10.⟩
CHART No. 2
COMPARISONS.
AVERAGE OF OXIDIZED ANIMALS IN 1% GAS.
GRAMS.
#43- THE BEST OXIDIZED CHECK ANIMAL.
100 GRAMS.
GRAMS.
DEAD 76 DAYS.
AVERAGE OF NATURAL ANIMALS IN 1% GAS.
GRAMS.
GRAMS.
AVERAGE OF 7 NATURAL CHECK ANIMALS.
DEAD
COMMON ROOT CHART.
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
WEEKS.
Jas. Todd OCT.28, 1910.

of all the oxidized animals carried in one per cent. of the oxidizing gases after inoculation for the purpose of showing the power of oxygen maintained during the struggle precipitated by the inoculation.

The check animal died, the others did not.

On the lower part of the drawing we compare the curve of the seven natural check animals that lived the longest with all the natural animals carried in one per cent. of the gas after inoculation.

Note that again the word "dead" appears on the check animal's curve but not on the other.

It would seem in looking at these curves, that oxygen had, through them, demonstrated its power in such a clear manner as not to require further discussion and we will pass on.

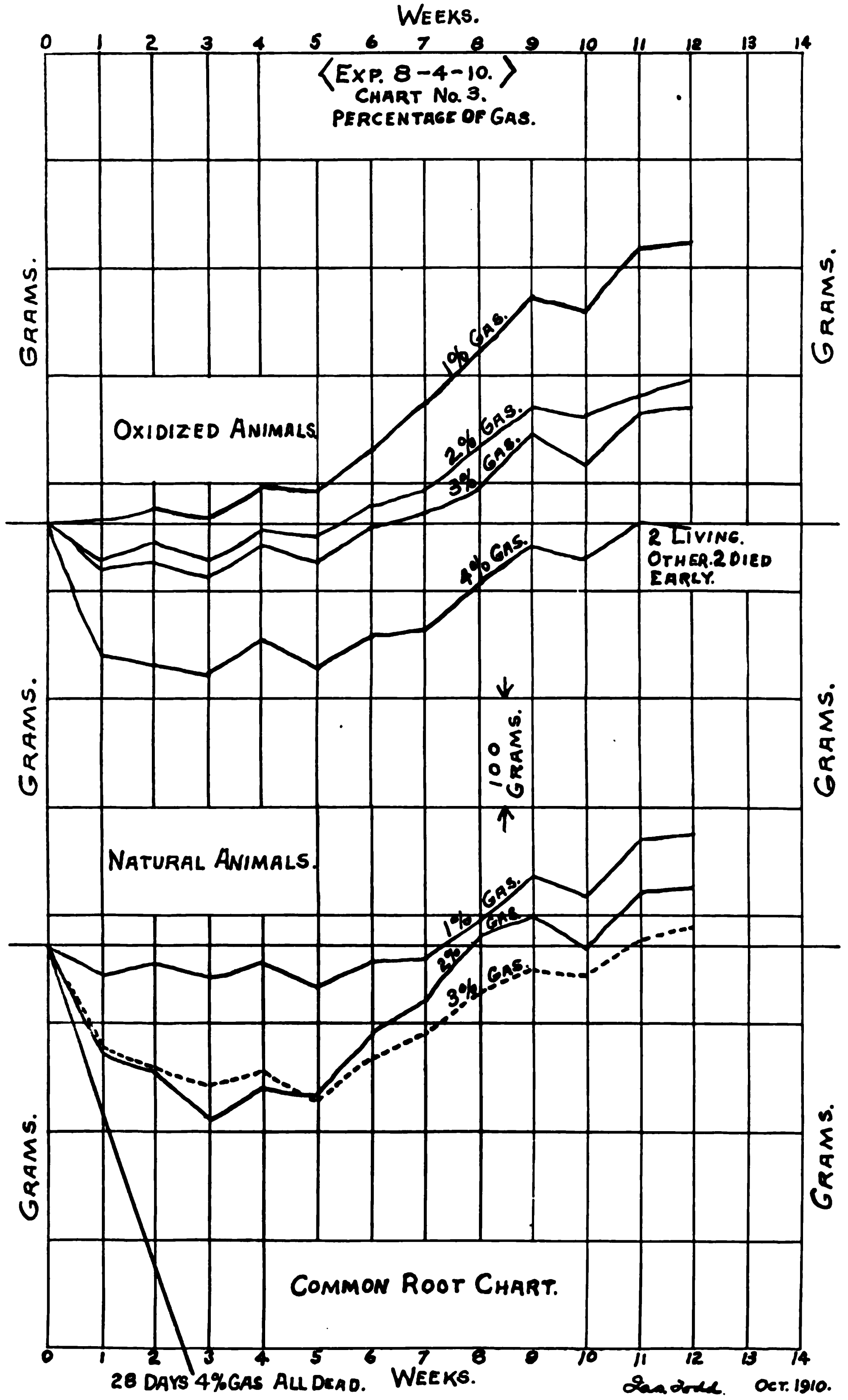
CHART NO. 3—PERCENTAGE OF GAS USED, page 161. On this drawing are placed the average curves of all the animals placed under the process, to demonstrate the changes due to different quantities of gas. It should be noted that all the natural animals placed in four per cent. of the gas died within four weeks and that one half of the previously oxidized ones also died. (See note.)

Judged by our more than six years of work, we consider that two per cent. of the oxidizing gases, accurately and continuously mixed with the blast of pure air blown into the rooms, gives the best results, although heavily inoculated animals will stand three per cent. in perfect safety as far as death from the gas strain is concerned.

A heavily inoculated animal can stand much more gas than a lightly inoculated one, because he needs it more.

It requires great care to take these delicate little animals through the early stages of preliminary oxidation and we have lost many in this way, but one can take a heavily inoculated animal and plunge

NOTE:—A superficial study of this experiment would lead to the conclusion that the less gas used the better the result. The fact is that the results here shown are influenced by the very light inoculation. In the later and heavily inoculated experiments it is plainly shown that from two to three per cent of the "ozonized" air gives the best results.—J. T.


WEEKS.
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
⟨EXP. 8-4-10.⟩
CHART No. 3.
PERCENTAGE OF GAS.
GRAMS.
OXIDIZED ANIMALS.
1% GAS.
2% GAS.
3% GAS.
4% GAS.
2 LIVING.
OTHER 2 DIED
EARLY.
100
GRAMS.
NATURAL ANIMALS.
1% GAS.
2% GAS.
3% GAS.
COMMON ROOT CHART.
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
28 DAYS 4% GAS ALL DEAD.
WEEKS.
Geo. Todd.
OCT. 1910.

it into three or four per cent. of the gas and it never dies from the strain. This is well-matured information and is both interesting and conclusive of the value of the proper use of the proper form of oxygen in combating disease.

CHART NO. 4, page 163. This is an exceedingly important drawing and brings, in strongest contrast, the principles we are demonstrating.

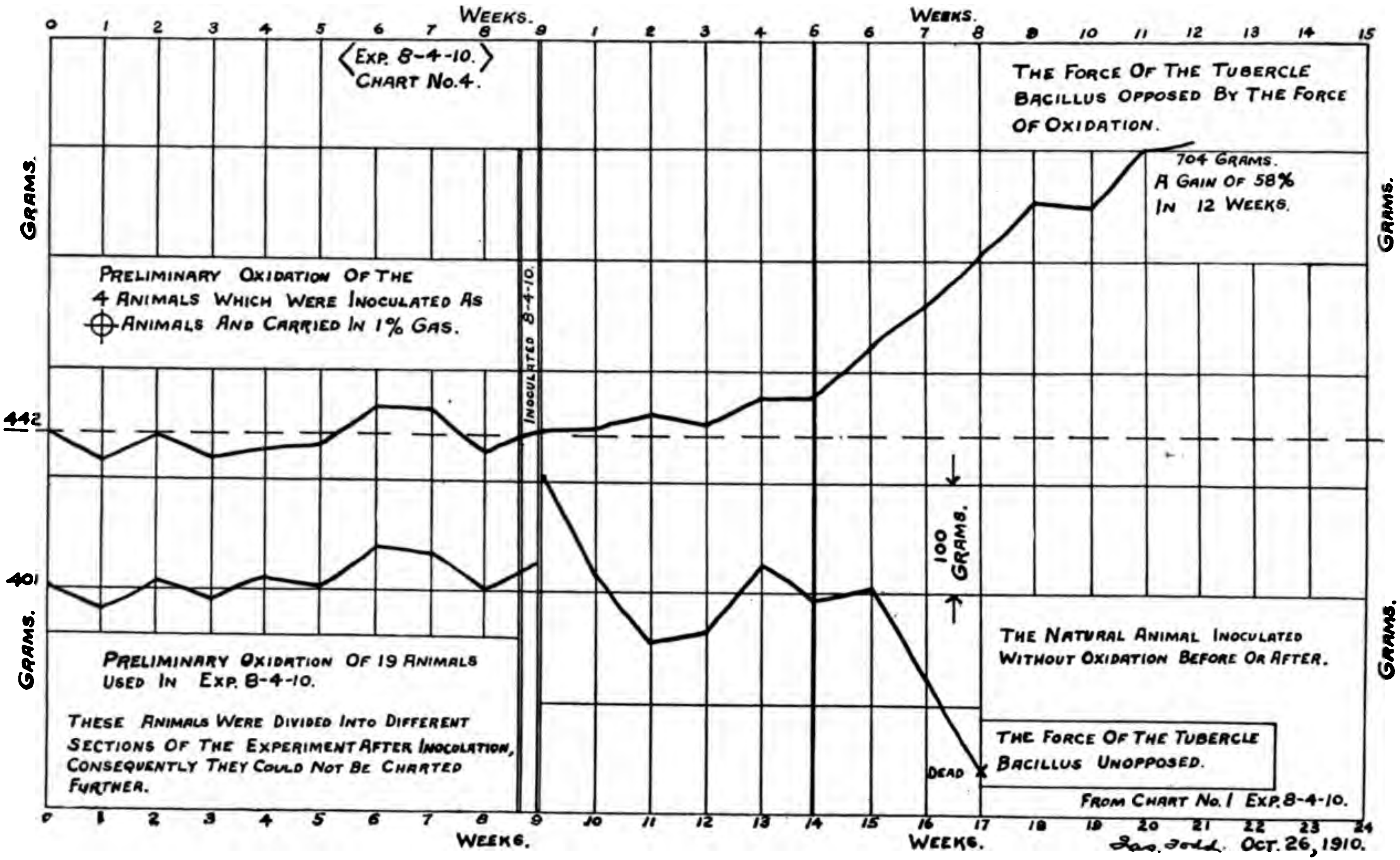
On the section of the drawing before inoculation, the section of preliminary oxidation, which is the making of an ⊕ animal for our purposes, we place, on the lower part of the drawing, the average weight changes of all the ⊕ animals prepared for the experiment and above this curve the four animals oxidized, inoculated and carried forward in one per cent. of the oxidizing gases.

Note the almost identical character of the curves which well brings out the uniform action of the process and especially note that they all reach their apex at the sixth to seventh week. This loss of weight at about the seventh week of preliminary oxidation seems to be a distinct mark of the process, as it is always present, and will be dealt with more fully in its proper place.

After inoculation the seven check animals lose weight very heavily, then rally strongly and then plunge to their death as any guinea pig must which has been inoculated with virulent tubercle bacilli and not placed under the power of the proper form of oxygen.

The four animals shown in the upper line have been carefully prepared by preliminary oxidation and kept under the power of the oxygen after the inoculation; all, according to our views, that can be done for them has been done, and they are deliberately put to the test and what a result. *Let the oxygen speak for itself through the curves on the drawing.*

All the animals that were carried in three per cent. of the gas, as well as those still living from the four per cent. section of the experiment, were chloroformed and autopsies performed at the end of twelve weeks and no disease was found.


Exp. 8-4-10.
Chart No. 4.
Weeks.
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
Grams.
442
401
100 Grams.
Inoculated 8-4-10.
Preliminary Oxidation Of The 4 Animals Which Were Inoculated As ⊕ Animals And Carried In 1% Gas.
Preliminary Oxidation Of 19 Animals Used In Exp. 8-4-10.
These Animals Were Divided Into Different Sections Of The Experiment After Inoculation, Consequently They Could Not Be Charted Further.
The Force Of The Tubercle Bacillus Opposed By The Force Of Oxidation.
704 Grams. A Gain Of 58% In 12 Weeks.
The Natural Animal Inoculated Without Oxidation Before Or After.
The Force Of The Tubercle Bacillus Unopposed.
Dead
From Chart No. 1 Exp. 8-4-10.
Jas. Todd. Oct. 26, 1910.

Of the remaining animals, namely those that had been carried in one per cent. and in two per cent. of the gas, with the exception of one ⊖ animal in the two per cent. of gas section which died about two weeks after inoculation, all were placed in one per cent. of the gas at the fourteenth week and we will follow their history on CHART NO. 6, page 165. On this drawing the four sections dealt with are carried separately in order to allow of comparisons. The trend of the animals is all upwards.

On page 166 we place CHART NO. 7. On this one drawing is the whole history of this experiment so placed as to show every vital detail at a single glance. The drawing is divided into three sections. On the upper section is the weight curve of the nineteen animals cured, which are here consolidated into one average curve of the whole.

At inoculation they averaged five hundred and seventy-two grams, at the end of eight months nine hundred grams. At this point the treatment was discontinued and the animals kept in an outdoor cage under ordinary conditions to determine if the disease would return.

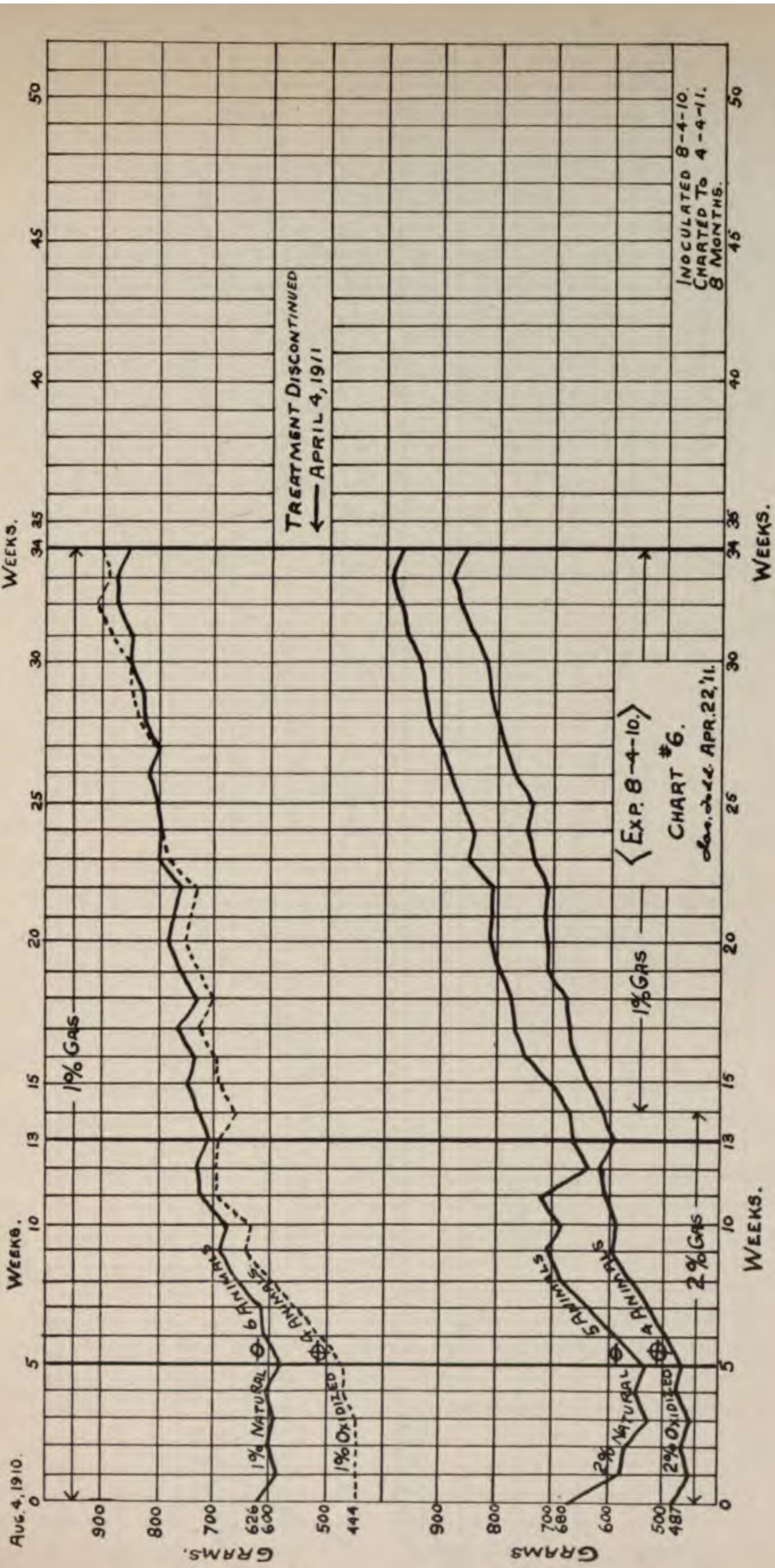
It is worth noting that the curve became much flatter after the treatment was discontinued, with practically no permanent increase in weight during this latter period of four months.

The average weight of the animals one year after their inoculation is another proof of their wonderful health; nine hundred and forty-six grams as the average weight of the nineteen animals proves them to be unusually large.

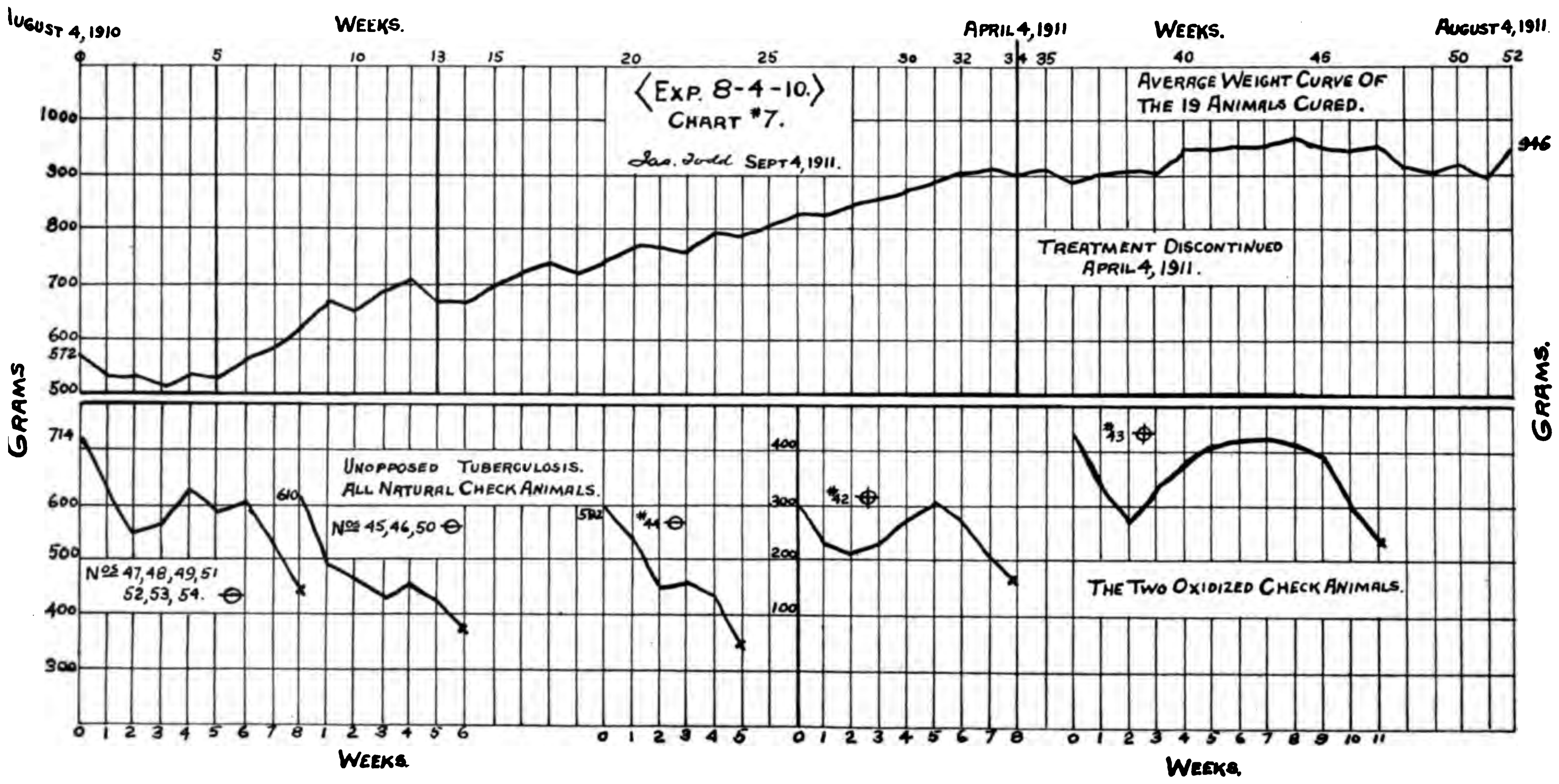
At the end of the year they were chloroformed and extensive autopsies performed, but no disease was found.

The lower left-hand section of the drawing carries the curves of the natural check animals and the right-hand lower section the two previously oxidized check animals.

From all sections of the experiment comes overwhelming evidence of the power of OXYGEN, and it will be well to realize the positive character of the arrayed proofs, as it is not the writer's intention,



Aug. 4, 1910.
Weeks.
Grams.
900
800
700
626
600
500
444
900
800
700
680
600
500
487
0
5
10
13
15
20
25
30
34
35
40
45
50
1% Gas
Treatment Discontinued
← April 4, 1911
1% Natural
6 Animals
1% Oxidized
6 Animals
2% Natural
5 Animals
2% Oxidized
4 Animals
2% Gas
1% Gas
Exp. 8-4-10.
Chart #6.
Lac. del. Apr. 22, '11.
Inoculated 8-4-10.
Charted to 4-4-11.
8 Months.



August 4, 1910
Weeks.
April 4, 1911
Weeks.
August 4, 1911.
0
5
10
13
15
20
25
30
32
34
35
40
45
50
52
⟨Exp. 8-4-10.⟩
Chart #7.
Jas. Todd Sept 4, 1911.
Average Weight Curve of
The 19 Animals Cured.
946
Treatment Discontinued
April 4, 1911.
1000
900
800
700
600
572
500
Grams
Grams.
714
600
500
400
300
Unopposed Tuberculosis.
All Natural Check Animals.
Nos 47, 48, 49, 51
52, 53, 54. ⊖
610
Nos 45, 46, 50 ⊖
582
#44 ⊖
400
300
200
100
#42 ⊕
#43 ⊕
The Two Oxidized Check Animals.
0 1 2 3 4 5 6 7 8
1 2 3 4 5 6
0 1 2 3 4 5
0 1 2 3 4 5 6 7 8
0 1 2 3 4 5 6 7 8 9 10 11
Weeks.
Weeks.

having delivered such indisputable facts, to argue about them; *the distinction is between life and death, while the difference is that the tubercle bacillus has at last met his natural opponent.*

We have spoken of the mistake made when the animals were inoculated and the resultant absence of tubercular organs in the check animals. We will take up this question of the cause of the death of the check animals by means of CHART NO. 8—CAUSE OF DEATH, page 168. On this drawing we have placed the weight curves of all the natural check animals used in this section of the animal work.

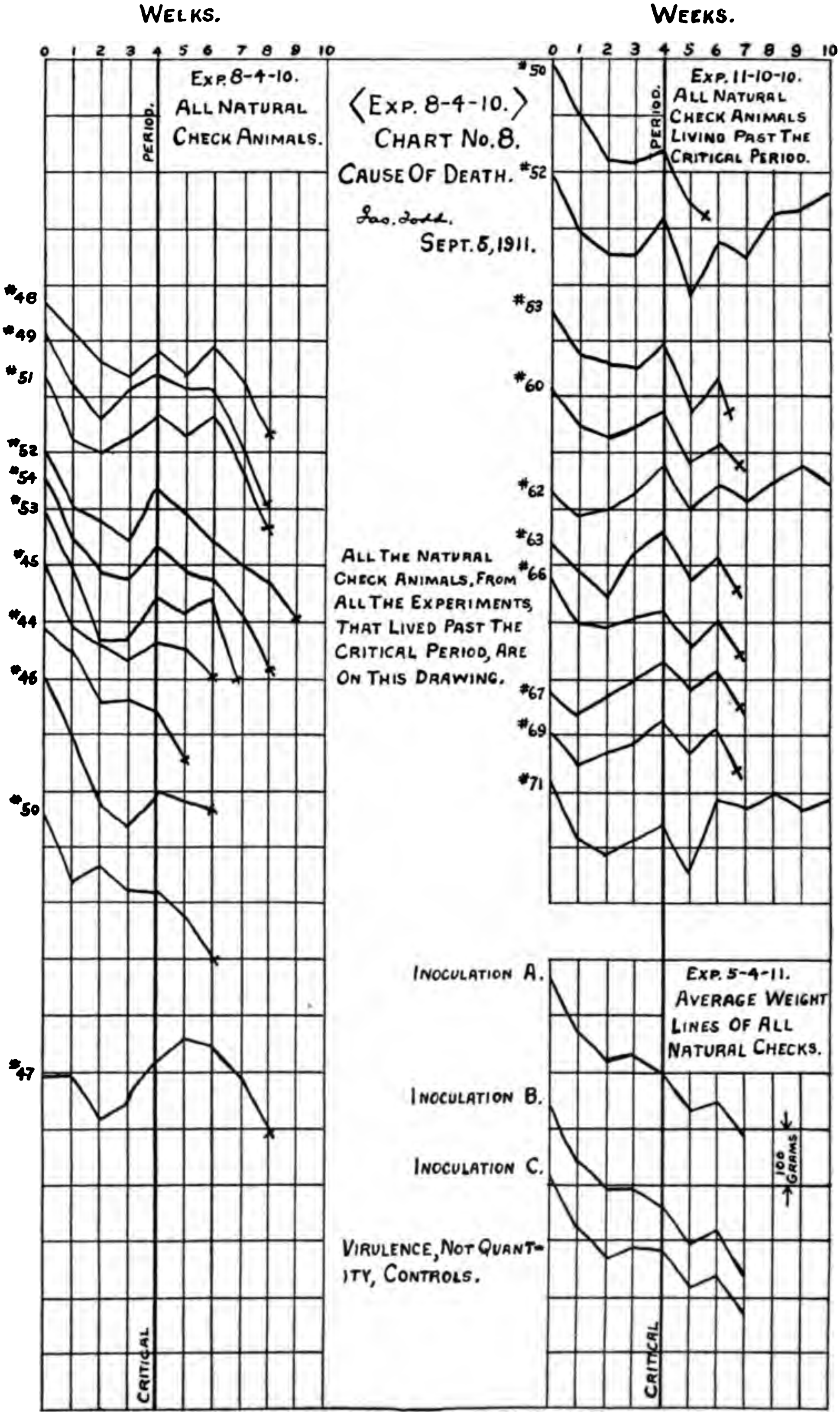
On the left side of the drawing we place the individual curves of each of the eleven natural check animals.

On the right upper section we place the curves of all the natural check animals from the November Experiment (EXPERIMENT 11–10–10) that lived past four weeks. Below these we place the average curves of each division of natural check animals from the First May Experiment (EXPERIMENT 5–4–11).

Please notice the heavy loss of weight at the fourth week in the check animals of the November Experiment; a terrific blow has been uniformly struck them at this period; the clearness, force and uniformity of the blow force it upon our attention; we call it the critical period in unopposed tuberculosis.

An examination of the curves of the First May Experiment (EXPERIMENT 5–4–11) just below show the same heavy decline at the same period as shown by average curves; there are thirty animals involved in the three curves of the natural check animals in this last experiment and each individual animal lost weight from the fourth to the fifth week.

All the check animals from these two experiments died with strongly tubercular organs, while the main character of their weight record was this blow at the critical period.



⟨Exp. 8-4-10.⟩
Chart No. 8.
Cause Of Death.
Jas. Todd.
Sept. 5, 1911.

All The Natural Check Animals, From All The Experiments, That Lived Past The Critical Period, Are On This Drawing.

Virulence, Not Quantity, Controls.

With this explanation of this peculiar phenomenon of the critical period before us, we turn to the check animals of our present experiment and we find the blow at the fourth week plainly before us in ten of the eleven animals.

This is very interesting and is real evidence to the student of the process, *but the fact that is paramount to all else in the experiment is that all the animals were inoculated with the tubercle bacillus and that the check animals all died while nineteen out of twenty of those under the treatment lived.*

We will here leave the August Experiment to take up the complicated phenomena which gradually bring us face to face with the greatest material problem man has ever attempted to solve. Commencing, as it does in the next experiment, with almost a failure and gradually unfolding until we find clear evidence of the different forms of an element.

EXPERIMENT 11-10-10

THE NOVEMBER EXPERIMENT

The plan of this experiment, which grew naturally out of the results of the August Experiment, was to inoculate the animals heavily and oppose the disease with a minimum quantity of the oxidizing gases.

There are between sixty and seventy animals involved in the experiment.

They were all inoculated subcutaneously in the abdominal region with five hundred million of the tubercle bacilli, the count being based on quantitative weights of the pure culture of the germs. Thus a very large number of germs were used and by placing them just under the skin of the animals we insured a fostering point for them to spread from.

The inoculation was opposed by one per cent. of the oxidizing gases mixed with ninety-nine per cent. of pure air. This was a great mistake and was one of the main causes why the experiment fell so far below the attainment of the previous ones.

After exposing the animals for three weeks to one per cent. of the oxidizing gases, we increased the quantity to two per cent., but the damage had already been done.

On page 172 we place CHART NO. 1—CHECK ANIMALS, EXPERIMENT 11-10-10. An examination of this drawing well demonstrates the strength and virulence of the inoculation and shows the peculiar critical period at the fourth week which we used in demonstrating the cause of the death of the check animals in the August Experiment.

We would particularly call attention to the violent changes shown by the weight curves of these animals and to the fact that less than half of them lived to pass the fourth week.

Turning now to CHART NO. 2—ANIMALS UNDER TREATMENT, on page 173, a glance shows that these animals lived longer than the check animals and that their curves are mainly free from the violent changes shown in the record of the check animals.

While more than one half of the check animals died before the fourth week, yet the first one to die under the treatment lived almost eight weeks.

Turning now to CHART NO. 2*A*, page 174, we find still longer life culminating in animal No. 49 and the same placid character of the curves is maintained; there can be but one conclusion based upon these smooth, slowly changing curves as compared with the extremely violent changes of the check animals and that is that the animals in which the germ force was opposed by the force of intensified oxygen suffered less.

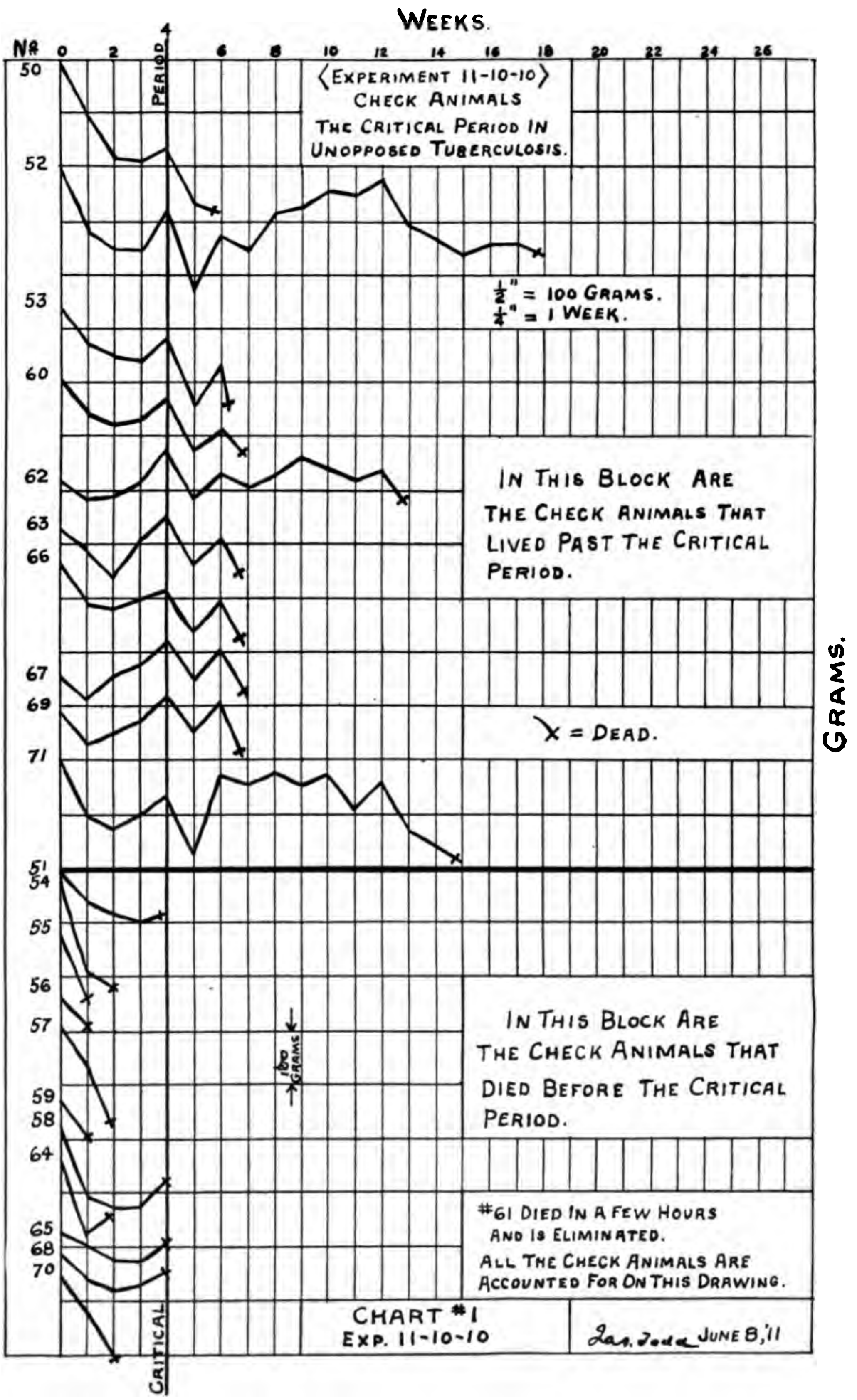
On this latter drawing are shown the curves of six females eliminated from the experiment; their pregnancy was discovered after their inoculation; we eliminated them from the work and in the future only inoculated male animals.

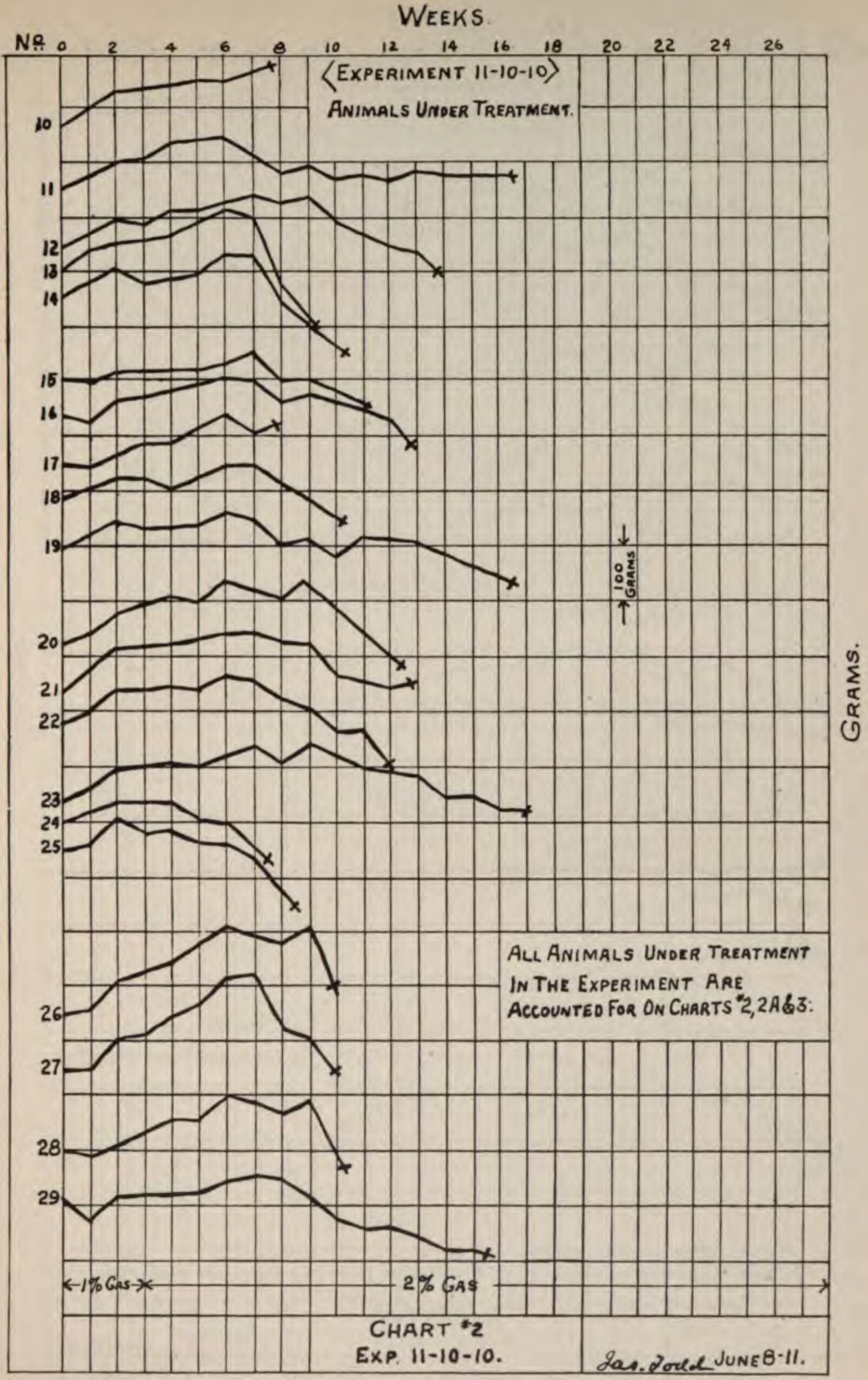
On page 175, we place the curve of animal No. 49. We ask a close examination of this animal's record as a demonstration of the power of oxygen, even when used as unintelligently as we here used it.

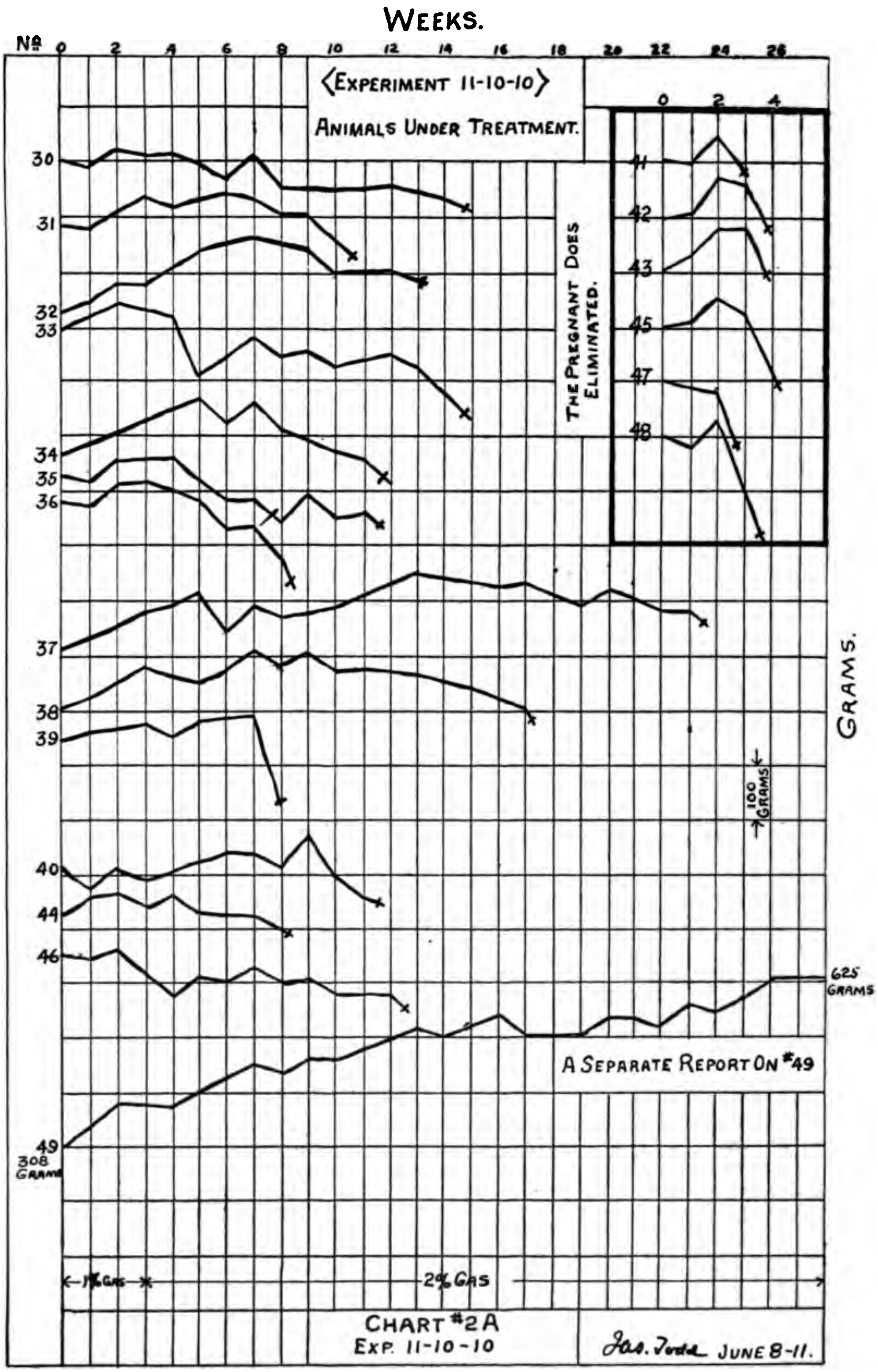
The animal moved smoothly forward in spite of the fact that five hundred millions of these dread germs had been placed in its little body; rising from a weight of three hundred and eight grams to above six hundred grams, and lived for almost a year.

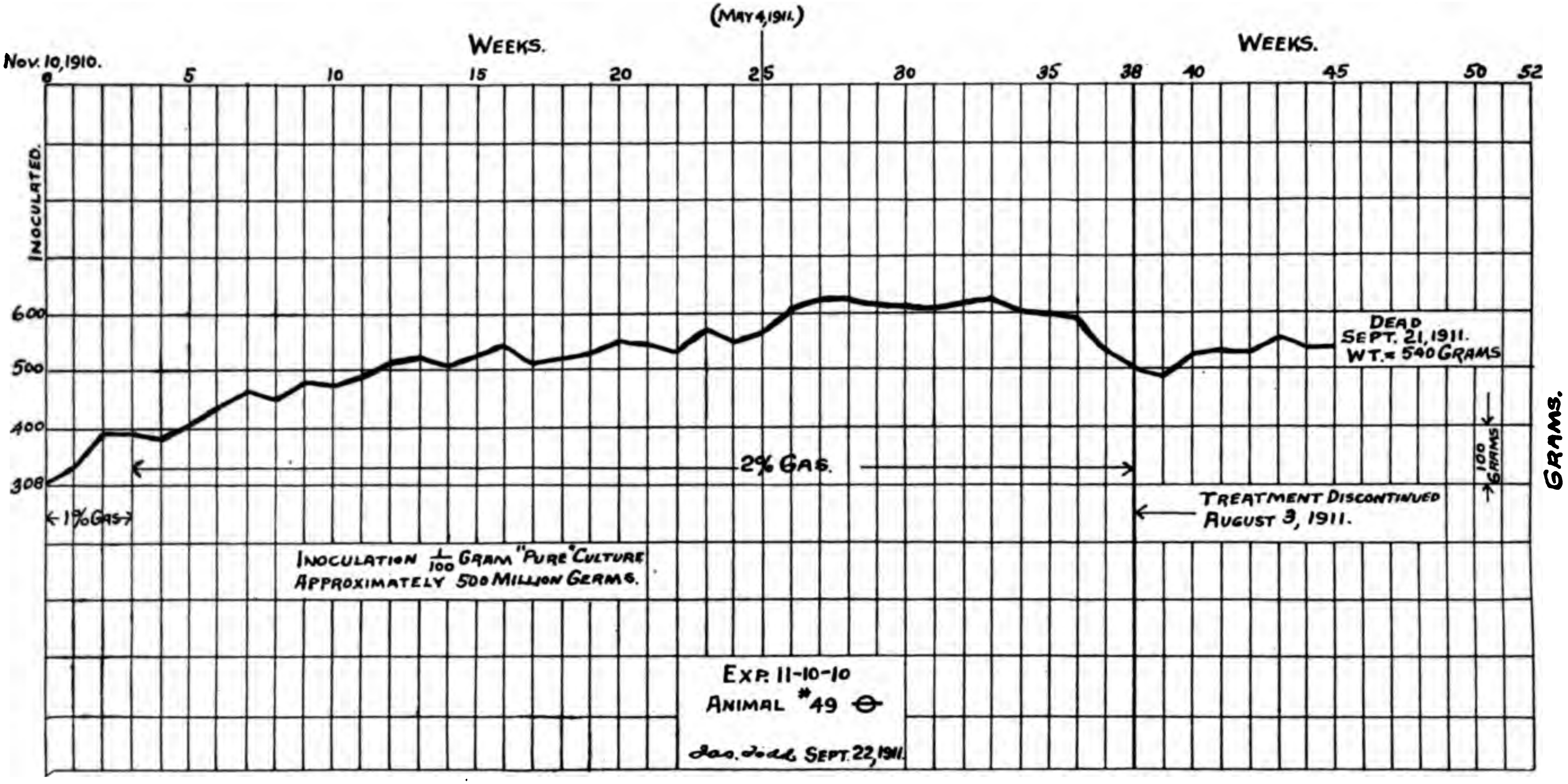
A process that can accomplish this in the face of the records made by the check animals must contain inherent power and when that process is applied to the strongest animal known, man, the record should be much better.

In leaving this animal's record it is worth noting that it lived certainly the greater portion of its natural span of life in spite of the hordes of the tubercle bacilli within its body. There were some evidences of tubercular healing found when its autopsy was performed.


Weeks.
No.
0
2
4
6
8
10
12
14
16
18
20
22
24
26
Critical Period
〈Experiment 11-10-10〉
Check Animals
The Critical Period In Unopposed Tuberculosis.
½" = 100 Grams.
¼" = 1 Week.
In This Block Are The Check Animals That Lived Past The Critical Period.
X = Dead.
Grams.
In This Block Are The Check Animals That Died Before The Critical Period.
100 Grams
#61 Died In A Few Hours And Is Eliminated.
All The Check Animals Are Accounted For On This Drawing.
Chart #1
Exp. 11-10-10
Jas. Todd June 8,'11
50
52
53
60
62
63
66
67
69
71
51
54
55
56
57
59
58
64
65
68
70


WEEKS.
No.
0
2
4
6
8
10
12
14
16
18
20
22
24
26
⟨EXPERIMENT 11-10-10⟩
ANIMALS UNDER TREATMENT.
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
100 GRAMS
GRAMS.
ALL ANIMALS UNDER TREATMENT IN THE EXPERIMENT ARE ACCOUNTED FOR ON CHARTS #2, 2A & 3.
←1% GAS→
2% GAS
CHART #2
EXP. 11-10-10.
Jas. Todd JUNE 8-11.


WEEKS.
Nº
0 2 4 6 8 10 12 14 16 18 20 22 24 26
⟨EXPERIMENT 11-10-10⟩
ANIMALS UNDER TREATMENT.
THE PREGNANT DOES ELIMINATED.
0 2 4
41
42
43
45
47
48
30
31
32
33
34
35
36
37
38
39
40
44
46
49
308 GRAMS
GRAMS.
100 GRAMS
625 GRAMS
A SEPARATE REPORT ON #49
1% GAS
2% GAS
CHART #2A
EXP. 11-10-10
Jas. Todd JUNE 8-11.


(May 4, 1911.)
Weeks.
Weeks.
Nov. 10, 1910.
0
5
10
15
20
25
30
35
38
40
45
50
52
Inoculated.
600
500
400
308
Grams.
100 Grams
2% Gas.
← 1% Gas →
Dead
Sept. 21, 1911.
Wt. = 540 Grams
Treatment Discontinued
August 3, 1911.
Inoculation $\frac{1}{100}$ Gram "Pure" Culture
Approximately 500 Million Germs.
Exp. 11-10-10
Animal #49 ⊖
Jas. Todd Sept. 22, 1911.

On page 177, we place CHART NO. 1—AUTOPSIES OF CHECK ANIMALS.

These autopsy charts are particularly interesting in that they show the animals arranged in the order in which they died, with the length of their lives shown by the length of the life line of each, and also in that they so well show the period of time necessary to involve the different organs. For instance, the spleen and liver are very rarely attacked until a month or more has passed and the lungs still later and frequently not at all.

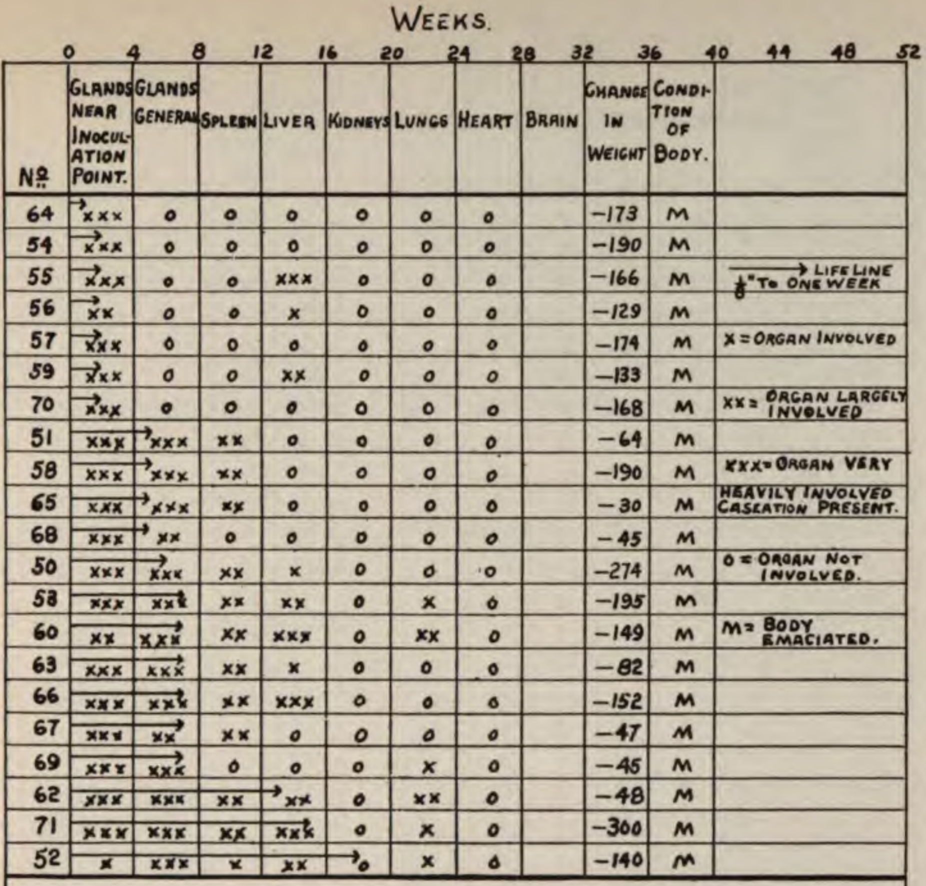
On page 178, we place CHART NO. 2—AUTOPSIES OF ANIMALS UNDER TREATMENT. It will be noted that the weight lost by these animals before death is, as a rule, much less than in the case of the check animals.

The writer considers it to be his duty to tell the full truth, as he sees it, in regard to these experiments. No attempt must be made to draw conclusions in favor of the process which common sense may not sustain, and no factor must be concealed. In his opinion, the great difference between the results of this experiment and the two that preceded it cannot properly be fully accounted for on the ground of a very heavy inoculation opposed by too small a quantity of the oxidizing gases. While it is true that this was a factor, yet in our judgment it was but a contributing one.

There is something radically wrong—*the vital force of the process is missing.*

It would probably not be interesting to follow us in detail through the five years of investigation, toil and anxiety that commenced at this stage of the work, and so we will instead try to give the vital facts as they developed, leaving the details for our own records.

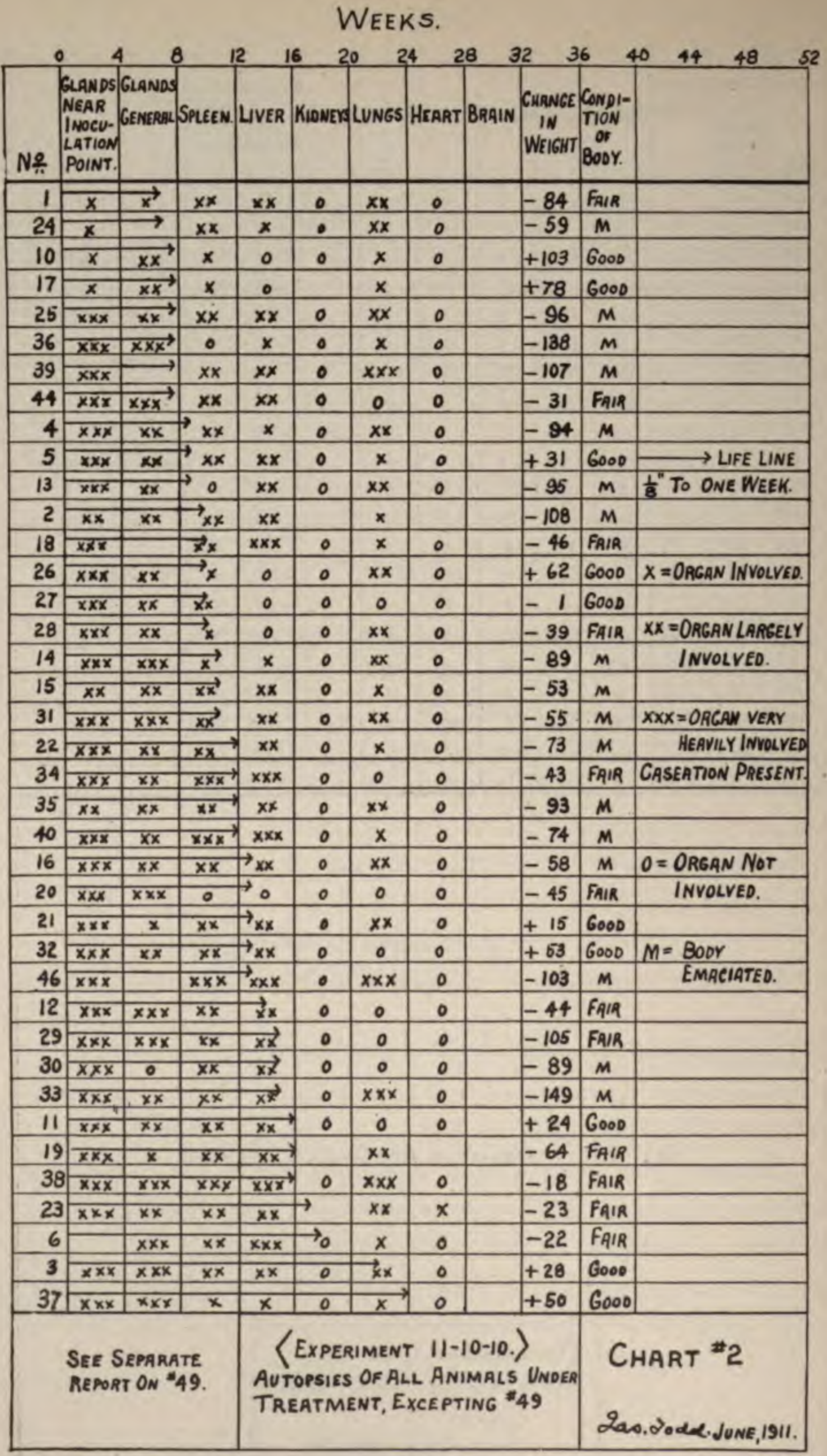
In common justice to ourselves we would ask the reader to appreciate, at its full significance, the fact that we are dealing with an invisible gas and that there is no reagent yet known to man that can divide one form from another, for we intend to prove by using tuber-



Nº	GLANDS NEAR INOCULATION POINT.	GLANDS GENERAL	SPLEEN	LIVER	KIDNEYS	LUNGS	HEART	BRAIN	CHANGE IN WEIGHT	CONDITION OF BODY.	
64	xxx	o	o	o	o	o	o		−173	M	
54	xxx	o	o	o	o	o	o		−190	M	
55	xxx	o	o	xxx	o	o	o		−166	M	→ LIFE LINE 1/8" TO ONE WEEK
56	xx	o	o	x	o	o	o		−129	M	
57	xxx	o	o	o	o	o	o		−174	M	X = ORGAN INVOLVED
59	xxx	o	o	xx	o	o	o		−133	M	
70	xxx	o	o	o	o	o	o		−168	M	XX = ORGAN LARGELY INVOLVED
51	xxx	xxx	xx	o	o	o	o		−64	M	
58	xxx	xxx	xx	o	o	o	o		−190	M	XXX = ORGAN VERY
65	xxx	xxx	xx	o	o	o	o		−30	M	HEAVILY INVOLVED CASEATION PRESENT.
68	xxx	xx	o	o	o	o	o		−45	M	
50	xxx	xxx	xx	x	o	o	o		−274	M	O = ORGAN NOT INVOLVED.
53	xxx	xxx	xx	xx	o	x	o		−195	M	
60	xx	xxx	xx	xxx	o	xx	o		−149	M	M = BODY EMACIATED.
63	xxx	xxx	xx	x	o	o	o		−82	M	
66	xxx	xxx	xx	xxx	o	o	o		−152	M	
67	xxx	xx	xx	o	o	o	o		−47	M	
69	xxx	xxx	o	o	o	x	o		−45	M	
62	xxx	xxx	xx	xx	o	xx	o		−48	M	
71	xxx	xxx	xx	xxx	o	x	o		−300	M	
52	x	xxx	x	xx	o	x	o		−140	M	

ALL CHECK ANIMALS ARE ON THIS DRAWING

⟨EXPERIMENT 11-10-10.⟩
AUTOPSIES OF CHECK ANIMALS
CHART #1
Jas. Todd. JUNE, 1911.


WEEKS.
0
4
8
12
16
20
24
28
32
36
40
44
48
52

No.	Glands near Inoculation Point.	Glands General	Spleen.	Liver	Kidneys	Lungs	Heart	Brain	Change in Weight	Condition of Body.
1	x	x	xx	xx	0	xx	0		– 84	Fair
24	x		xx	x	0	xx	0		– 59	M
10	x	xx	x	0	0	x	0		+103	Good
17	x	xx	x	0		x			+78	Good
25	xxx	xx	xx	xx	0	xx	0		– 96	M
36	xxx	xxx	0	x	0	x	0		–138	M
39	xxx		xx	xx	0	xxx	0		–107	M
44	xxx	xxx	xx	xx	0	0	0		– 31	Fair
4	xxx	xx	xx	x	0	xx	0		– 94	M
5	xxx	xx	xx	xx	0	x	0		+ 31	Good
13	xxx	xx	0	xx	0	xx	0		– 95	M
2	xx	xx	xx	xx		x			–108	M
18	xxx		xx	xxx	0	x	0		– 46	Fair
26	xxx	xx	x	0	0	xx	0		+ 62	Good
27	xxx	xx	xx	0	0	0	0		– 1	Good
28	xxx	xx	x	0	0	xx	0		– 39	Fair
14	xxx	xxx	x	x	0	xx	0		– 89	M
15	xx	xx	xx	xx	0	x	0		– 53	M
31	xxx	xxx	xx	xx	0	xx	0		– 55	M
22	xxx	xx	xx	xx	0	x	0		– 73	M
34	xxx	xx	xxx	xxx	0	0	0		– 43	Fair
35	xx	xx	xx	xx	0	xx	0		– 93	M
40	xxx	xx	xxx	xxx	0	x	0		– 74	M
16	xxx	xx	xx	xx	0	xx	0		– 58	M
20	xxx	xxx	0	0	0	0	0		– 45	Fair
21	xxx	x	xx	xx	0	xx	0		+ 15	Good
32	xxx	xx	xx	xx	0	0	0		+ 53	Good
46	xxx		xxx	xxx	0	xxx	0		–103	M
12	xxx	xxx	xx	xx	0	0	0		– 44	Fair
29	xxx	xxx	xx	xx	0	0	0		–105	Fair
30	xxx	0	xx	xx	0	0	0		– 89	M
33	xxx	xx	xx	xx	0	xxx	0		–149	M
11	xxx	xx	xx	xx	0	0	0		+ 24	Good
19	xxx	x	xx	xx		xx			– 64	Fair
38	xxx	xxx	xxx	xxx	0	xxx	0		–18	Fair
23	xxx	xx	xx	xx		xx	x		– 23	Fair
6		xxx	xx	xxx	0	x	0		–22	Fair
3	xxx	xxx	xx	xx	0	xx	0		+28	Good
37	xxx	xxx	x	x	0	x	0		+50	Good

→ LIFE LINE $\frac{1}{8}$" TO ONE WEEK.

X = ORGAN INVOLVED.

XX = ORGAN LARGELY INVOLVED.

XXX = ORGAN VERY HEAVILY INVOLVED CASEATION PRESENT.

0 = ORGAN NOT INVOLVED.

M = BODY EMACIATED.

SEE SEPARATE REPORT ON #49.

⟨EXPERIMENT 11-10-10.⟩
AUTOPSIES OF ALL ANIMALS UNDER TREATMENT, EXCEPTING #49

CHART #2

Jas. Todd. JUNE, 1911.

culosis and other diseases, for the study of so-called ozone, that the element OXYGEN can and does take many different forms; that some of these forms, even of the intensified kind, have little or no effect on disease, while other forms create a strong, definite resistance and that there exist still other classes or forms of oxygen that can raise the vital forces of the living body so strongly as to rob these dread diseases of their terrors for us.

In the end we do not solve the problem, as we have not the resources necessary to its complete mastery, but we do so circumscribe and develop it as to place its full solution within reach of the world, if the world so chooses.

We would also here state that we do not conceive that we are trying to cure tuberculosis by means of oxygen, *we are rather trying to raise the vital forces of the living body by means of certain forms of intensified oxygen so as to enable that body to master its own problems. We do not attempt to reach tuberculosis; we rather attempt to reach and fortify the living body, knowing that it can then reach and master its own problems far better than we could do.*

The breadth of our work will be found to sustain our claims but please note that while recognizing the breadth of the principles we deal with, yet that we do not claim that their application is universal.

To commence with our problem, a close investigation established the fact that the operation of our machinery for the "ozonizing" of the air had changed.

The square glass plates used between the various terminals for treating the air in converting a portion of it into so-called ozonized air would no longer stand the strain and we could only carry 5,900 volts in the machine where previously we carried 6,600.

For more than two years we changed and studied our machinery operations before discovering the cause and by that time found that our problem consisted not of simply returning to the proper voltage, but rather to a number of factors, all of which had to be brought into harmony.

The different factors will be dealt with as they occurred and in the final summing up we will gather them all together in a separate chapter.

Many months were given to the study of and preparation for the experiment we will next take up, and a year and a half to its execution.

THE INVESTIGATION PRECEDING THE FIRST MAY EXPERIMENT

Until this time we had paid very little attention to the operation of our machinery so long as it made a comparatively uniform supply of so-called ozonized air, as we had had no conception past the use of so-called ozone as an intensified form of oxygen; but now all had to be changed as we found that for some unknown reason the trend of our work had lowered.

The investigation started in the fall of 1910 has gone on unceasingly to the present time, a period of five years.

For long it was a vague groping in the dark, for our gas is invisible and there are, as yet, no known reagents to divide one form from another.

The main hope held out by the continuance of the work was the fact that if our experiments were, in the main, well designed and their results wisely interpreted, the work would in time show its own trend.

This has really proved to be the case, as in looking back over its course it becomes a study of tuberculosis by means of so-called ozone and a study of the different gases by means of their effect on tuberculosis.

The final result has been clear and conclusive and may as well be told here as later.

The conclusion we draw from the mass of the work is that instead of having one form of intensified oxygen to deal with, we have many, and that there is more than one factor in mechanical operations that affects the result. It seems as if the path was a very narrow one for any change in any chemical, mechanical or electrical factor seems to change the result. A change in voltage, a change in the character of the insulators used, temperature, humidity of the air, the speed of its passage, all strongly affect the result and these are but the beginnings.

The reader will appreciate, if he is skilled in chemistry, *the tremendous import of a result which goes far to establish as a fact that oxygen can and does take many forms, thus establishing the element as capable of change.*

With our final conclusions thus outlined, we will turn to the engine room where the work now centers.

We find in the engine room the following machinery:

A small dynamo specially wound for the purpose of making "ozone."

This dynamo operates at 100 volts with a very small amperage.

An ordinary transformer stepping up the current by the multiple 66.

An ozone generator of an obsolete type, composed of four cells through which the air passes.

Each cell is composed of thirty-two corrugated aluminum "mattresses" six inches square; between each mattress is a glass plate eight inches square and one eighth of an inch thick.

Terminal wires run from the dynamo through the proper circuit to each mattress.

The "ozone" cells are cased in slate boxes and the air passes upwards through the mattresses, thus coming into contact with the electric current.

The four generating cells were enclosed within a very poorly designed and constructed cast-iron case.

Later it was demonstrated that the poor construction of this casing led to a leakage of air through its defective joints, amounting in round figures to fifty per cent. Untreated air was thus mixed with that which had been ozonized immediately after its "ozonization."

The air was made to flow through the "ozonizers" by a small Root blower which up to this time had drawn the air through.

The rest of the engine room equipment, consisting of the necessary steam engine to drive the whole apparatus, a large Root blower to supply the pure air used in the animal rooms to dilute the "ozonized air," switchboards, voltmeters, shafting, etc., do not enter into the problem and so require no description.

The air was drawn by the blower through the "ozonizers" and was then, after passing through the blower, forced to the animal rooms through brass pipes, a distance of about one hundred feet, there to be mixed in measured quantities with the pure air coming from the other blower.

Nitric acid resulting from the formation of nitrogen peroxide during the process of "ozonizing" the air had been present during the first two experiments to such an extent as to cause us to place drip pipes in the lines to draw it off and thus save our piping.

Nitrogen peroxide was not present during the November Experiment, which fact created what we call the nitrogen problem—the question of whether nitrogen was an essential of the process.

This phase of the problem is dealt with later at great length by means of the Nitrogen Experiment.

The pipes from the engine room to the animal rooms were found heavily coated on the inside with oxide of iron, caused by the "ozonized air" corroding the cast-iron case and impellers of the blower, and the red oxide of iron thus formed was forced through the whole system of piping. Wherever collected from the pipes, this red oxide of iron, when heated in a test tube, gave off the orange-colored fumes of peroxide of nitrogen, thus showing it to be saturated with nitrogen compounds.

In the CHEMICAL AND MECHANICAL SECTION we show by experiment the apparent catalytic effect of iron oxide on "ozone," it having the power of destroying the gases by contact with them, without undergoing any apparent change itself, and so the element iron becomes a factor in our problem as it absorbs nitrogen peroxide and destroys "ozone."

The most apparent factor that the investigation developed was the fact that in the first two experiments our "ozonizers" were operated with 100 volts on the dynamo and 6,600 on the generating cells, while now we could barely attain 90 volts on the dynamo and consequently less than 6,000 on the cells.

The glass plates separating the mattresses broke down if we tried to raise the voltage and even at 6,000 volts broke very frequently.

This seemed to be the most evident change in operations and we bent all our energies to its correction, but it took almost two years before the problem was solved and we could carry our full force on the "ozonizers," so we of necessity started into our next experiment running ten per cent. low in voltage.

We decided to eliminate the effect of iron from the work and constructed an entirely new "ozone" generator, strongly and well built of cast iron, but with all the inside of the casing and the pipes leading from it enamelled with a vitreous enamel burned on, such as is used on bathtubs.

We then placed the Root blower so as to *force* the air through the generating cells, so that after it was "ozonized" it did not come into contact with iron.

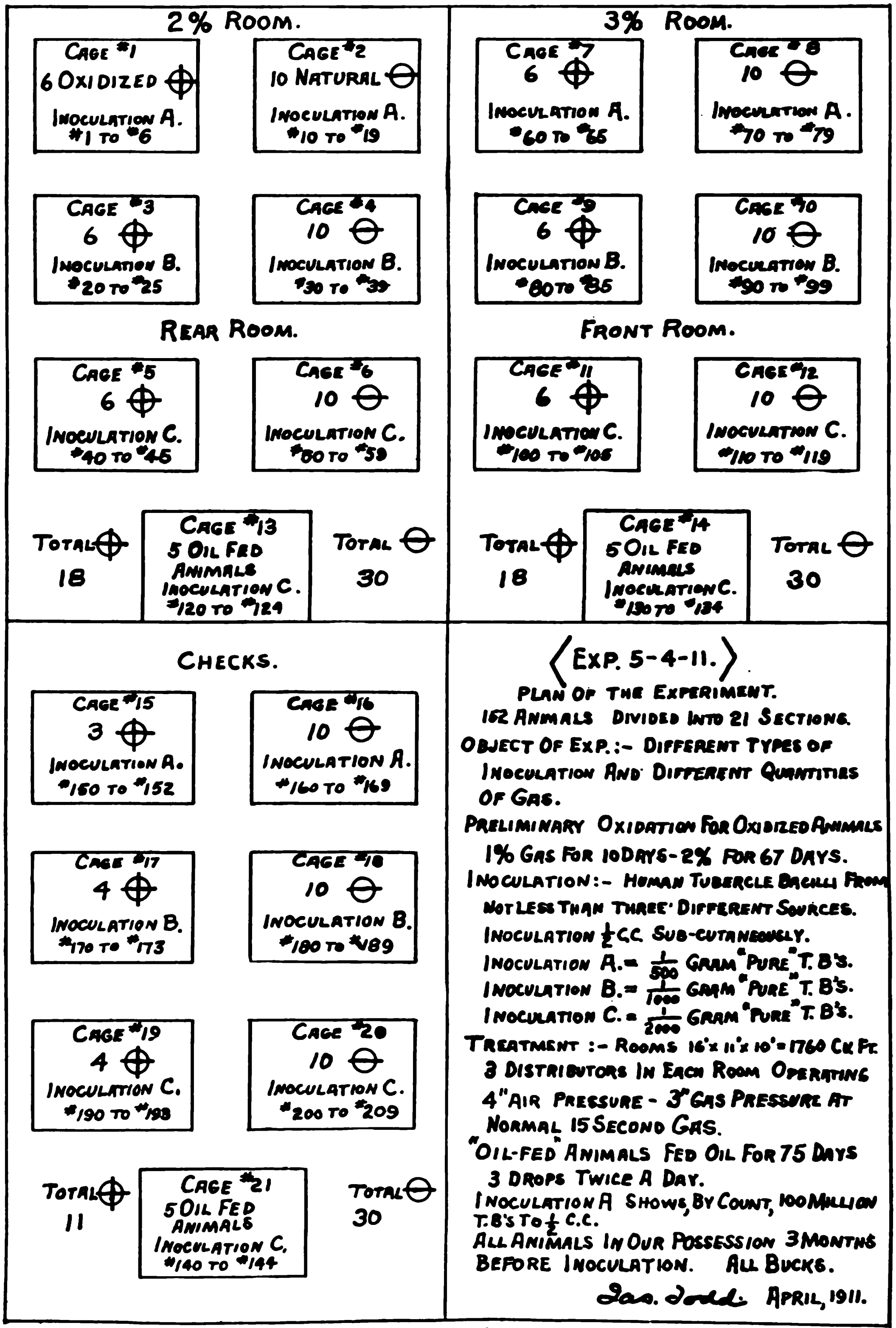
At the low voltage we were forced to use, we had no compounds of nitrogen present and so we passed to our experiment with nitrogen compounds eliminated, iron eliminated and operating ten per cent. low on voltage.

At the same time we concluded to consider the quantity of air and "ozonized air" which passed through the rooms in a given time. To accomplish this we adopted the rule of using one distributor for each five hundred cubic feet of room capacity. (The distributor is shown in detail in the last section of the book.)

This consideration of and heavy increase in the quantity of air and oxidizing gases passing through the animal rooms in a given time seems to have been an important step forwards.

Our reasoning is that intensified oxygen is very fragile and requires to be used quickly.

With this necessarily long explanation of our surroundings as affecting our work, we will take up the largest and most comprehensive of the experiments, realizing that its very size requires great care and system to prevent the results from becoming too involved.



2% ROOM.

CAGE #1
6 OXIDIZED ⊕
INOCULATION A.
#1 TO #6

CAGE #2
10 NATURAL ⊖
INOCULATION A.
#10 TO #19

CAGE #3
6 ⊕
INOCULATION B.
#20 TO #25

CAGE #4
10 ⊖
INOCULATION B.
#30 TO #39

REAR ROOM.

CAGE #5
6 ⊕
INOCULATION C.
#40 TO #45

CAGE #6
10 ⊖
INOCULATION C.
#50 TO #59

TOTAL ⊕
18

CAGE #13
5 OIL FED
ANIMALS
INOCULATION C.
#120 TO #124

TOTAL ⊖
30

3% ROOM.

CAGE #7
6 ⊕
INOCULATION A.
#60 TO #65

CAGE #8
10 ⊖
INOCULATION A.
#70 TO #79

CAGE #9
6 ⊕
INOCULATION B.
#80 TO #85

CAGE #10
10 ⊖
INOCULATION B.
#90 TO #99

FRONT ROOM.

CAGE #11
6 ⊕
INOCULATION C.
#100 TO #106

CAGE #12
10 ⊖
INOCULATION C.
#110 TO #119

TOTAL ⊕
18

CAGE #14
5 OIL FED
ANIMALS
INOCULATION C.
#130 TO #134

TOTAL ⊖
30

CHECKS.

CAGE #15
3 ⊕
INOCULATION A.
#150 TO #152

CAGE #16
10 ⊖
INOCULATION A.
#160 TO #169

CAGE #17
4 ⊕
INOCULATION B.
#170 TO #173

CAGE #18
10 ⊖
INOCULATION B.
#180 TO #189

CAGE #19
4 ⊕
INOCULATION C.
#190 TO #193

CAGE #20
10 ⊖
INOCULATION C.
#200 TO #209

TOTAL ⊕
11

CAGE #21
5 OIL FED
ANIMALS
INOCULATION C.
#140 TO #144

TOTAL ⊖
30

⟨EXP. 5-4-11.⟩

PLAN OF THE EXPERIMENT.

162 ANIMALS DIVIDED INTO 21 SECTIONS.

OBJECT OF EXP.:- DIFFERENT TYPES OF INOCULATION AND DIFFERENT QUANTITIES OF GAS.

PRELIMINARY OXIDATION FOR OXIDIZED ANIMALS 1% GAS FOR 10 DAYS - 2% FOR 67 DAYS.

INOCULATION:- HUMAN TUBERCLE BACILLI FROM NOT LESS THAN THREE DIFFERENT SOURCES.

INOCULATION $\frac{1}{2}$ C.C. SUB-CUTANEOUSLY.

INOCULATION A. = $\frac{1}{500}$ GRAM "PURE" T. B'S.

INOCULATION B. = $\frac{1}{1000}$ GRAM "PURE" T. B'S.

INOCULATION C. = $\frac{1}{2000}$ GRAM "PURE" T. B'S.

TREATMENT :- ROOMS 16'x 11'x 10' = 1760 CU FT. 3 DISTRIBUTORS IN EACH ROOM OPERATING 4" AIR PRESSURE - 3" GAS PRESSURE AT NORMAL 15 SECOND GAS.

"OIL-FED" ANIMALS FED OIL FOR 75 DAYS 3 DROPS TWICE A DAY.

INOCULATION A SHOWS, BY COUNT, 100 MILLION T.B'S TO $\frac{1}{2}$ C.C.

ALL ANIMALS IN OUR POSSESSION 3 MONTHS BEFORE INOCULATION. ALL BUCKS.

Jas. Todd. APRIL, 1911.

CHART #1

EXPERIMENT 5-4-11

THE FIRST MAY EXPERIMENT

On page 186 we place CHART NO. 1—THE PLAN OF THE EXPERIMENT.

By a study of this plan it is found that we have one hundred and fifty-two animals divided into twenty-one sections; that we are handling both the oxidized and the natural animal in large numbers involving three different strengths of inoculation *A*, *B* and *C* and two different strengths of gas, two per cent. and three per cent. All the details are on the plan and should be thoroughly noted, as the experiment is so large as to tend to become involved in one's mind if its plan is not thoroughly understood at the start.

There are twenty-three drawings used as a basis for our reasoning and the full history of each animal is given in detail and of all the animals there is not a single elimination.

It will be noticed that the plan carries in each of its main sections five animals marked as "oil fed." These records are to be set aside in this editlon.

On account of the general plan and detail of the drawings, we can proceed very rapidly to the consideration of the results of the experiment which are very clear and conclusive.

We will take up the check animals first, starting with CHART NO. 2, page 189.

On the left side of the drawing are three previously oxidized, ⊕, check animals, while on the right are ten natural, ⊖, check animals.

All these animals were inoculated with the "*A*" inoculation, consisting of one hundred millions of germs to each animal.

A single glance at the two columns of weight curves shows that the ⊕ did not lose weight as rapidly as the natural, or ⊖, ones.

Again is brought into prominence the greater strength of the oxidized animal, demonstrated even where it is used as a check animal to which no intensified oxygen is given after inoculation. Such a distinction as this means real inherent strength of the animal due to the process. (See Note.)

Notice the virulence, or power, of the inoculation we must fight as demonstrated by the heavy weight loss in the natural check animals and their short life.

If the power of intensified oxygen can materially affect the situation with which we are here brought face to face, then there can be no doubt of the value of our process and nothing should be allowed to stand in the path of its full development.

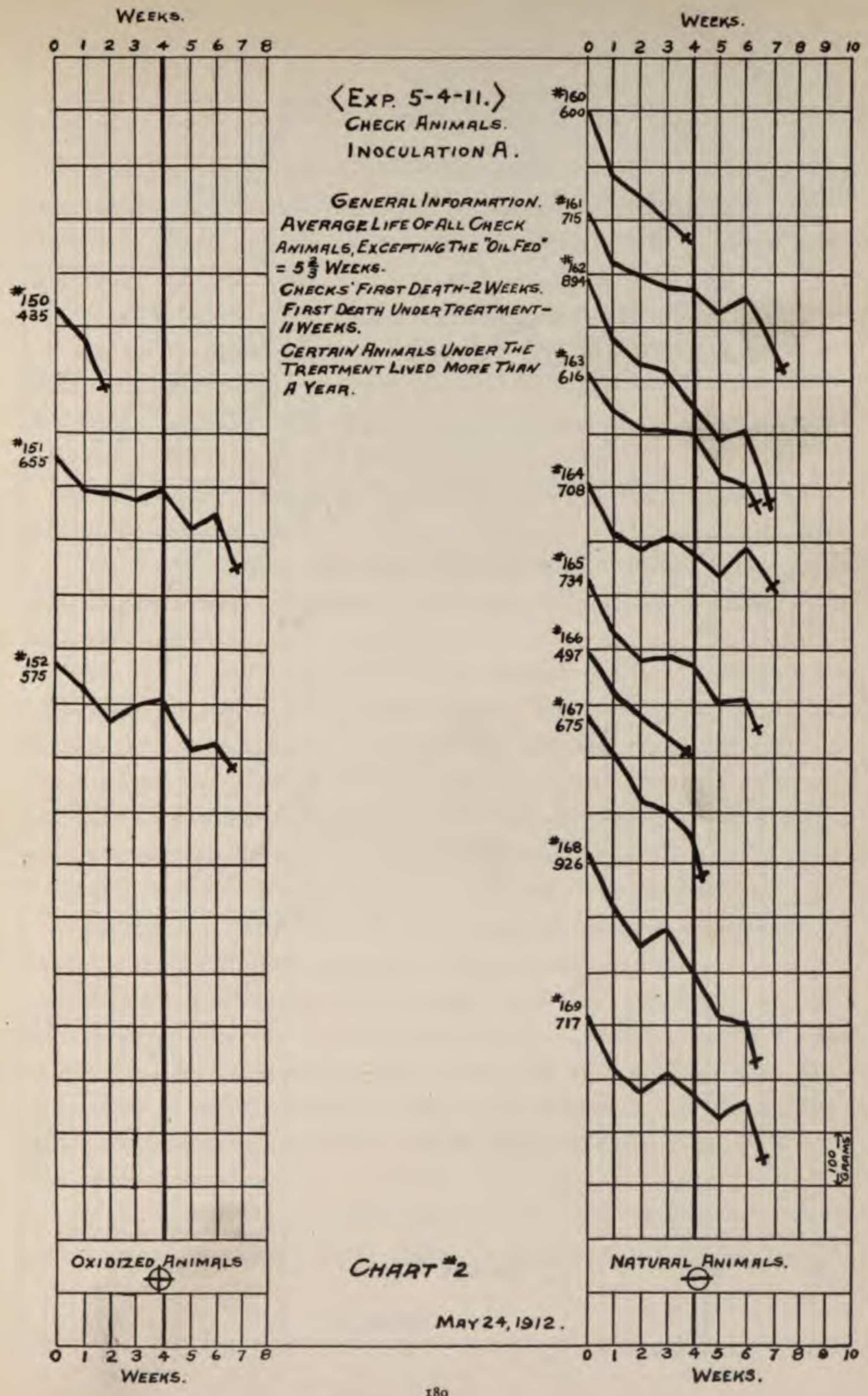
On page 190, we place CHART NO. 3, CHECK ANIMALS INOCULATION "*B*," which consists of fifty million germs; one half the strength of the "*A*" inoculation.

Note on the left column the ⌖ animals—No. 171 fights for eighteen weeks—and that they all lose less rapidly than the ⊖ ones on the right of the drawing. Among the latter notice the fearful losses of No. 184 and No. 189; study carefully the .curve of each of the fourteen, for in each can be found distinctions all tending to make clear the path we are following.

Turn to CHART NO. 4, page 192, "*C*" inoculation, or twenty-five million germs. Exactly the same results are found, greater strength for the previously oxidized animals. Examine the curves closely. See the loss of over four hundred grams in two weeks by animal No. 205, ⊖. Look at No. 206. The results are undeniable and we must admit that oxygen has asserted itself as a factor in the battle.

Please note that we are using large numbers of animals, that the record of each is before us and that the results are conclusive.

NOTE:—The reader will notice that the ⊖ animals are heavier than the ⌖ and consequently have more weight to lose but that the drop in the lines of the ⊖ is exceedingly heavy and the system resistances very weak.—J. T.



⟨EXP. 5-4-11.⟩
CHECK ANIMALS.
INOCULATION A.

GENERAL INFORMATION.

AVERAGE LIFE OF ALL CHECK ANIMALS, EXCEPTING THE "OIL FED" = 5⅔ WEEKS.

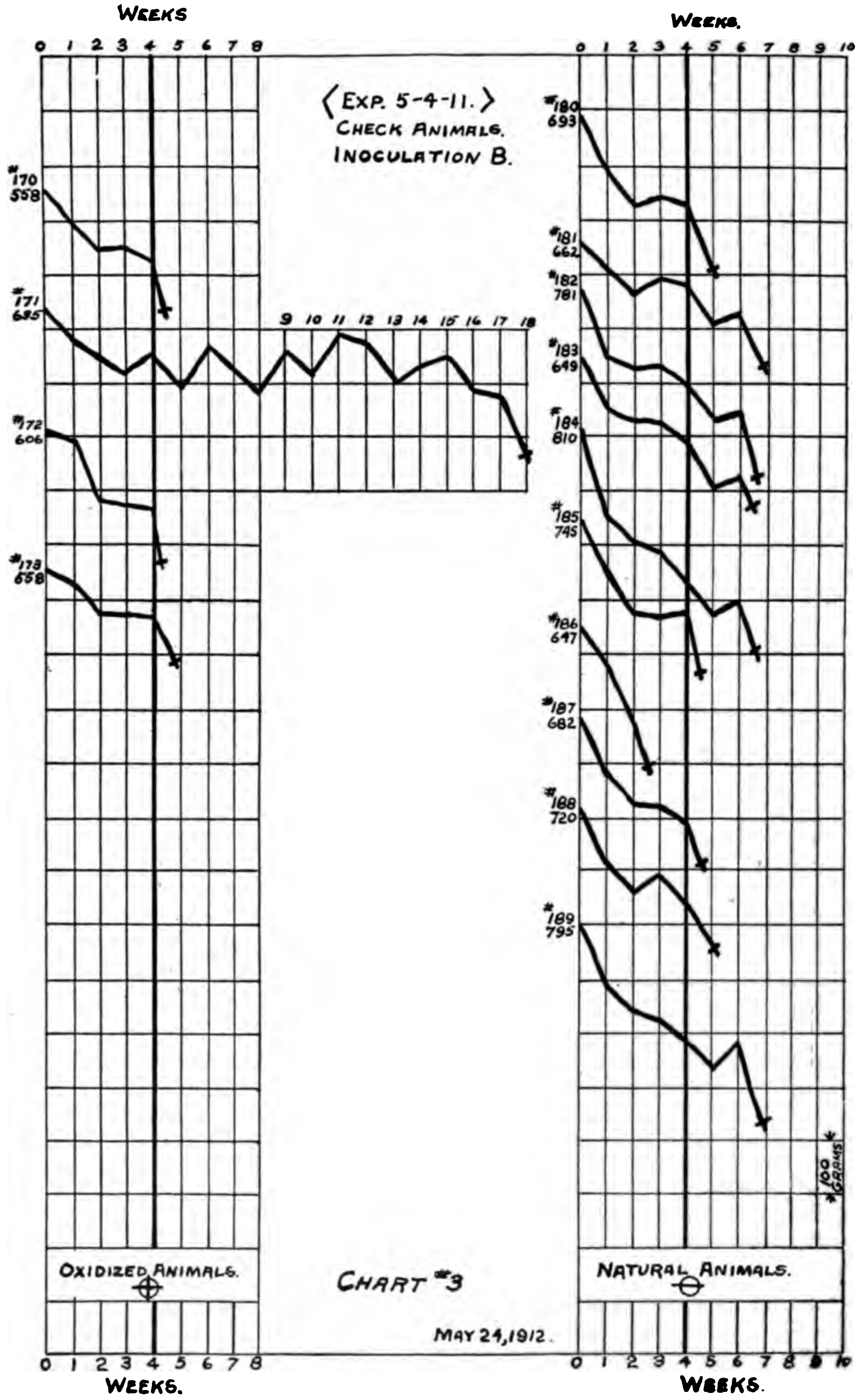
CHECKS' FIRST DEATH-2 WEEKS.

FIRST DEATH UNDER TREATMENT-11 WEEKS.

CERTAIN ANIMALS UNDER THE TREATMENT LIVED MORE THAN A YEAR.

CHART #2

MAY 24, 1912.



⟨EXP. 5-4-11.⟩
CHECK ANIMALS.
INOCULATION B.

CHART #3

MAY 24, 1912.

Among these animals is where we largely obtain the information that the number of germs used has little to do with the result. This is clearly shown by the three different inoculations we have just studied.

On page 193 we place CHART NO. 5—CHECK ANIMALS.

This chart brings the curves into close comparison on the question of the O plus and the O minus and also shows the lack of distinction due to the varying number of germs used in the different inoculations. It is left without further comment.

Leaving the check animals we will take up the animals under our treatment.

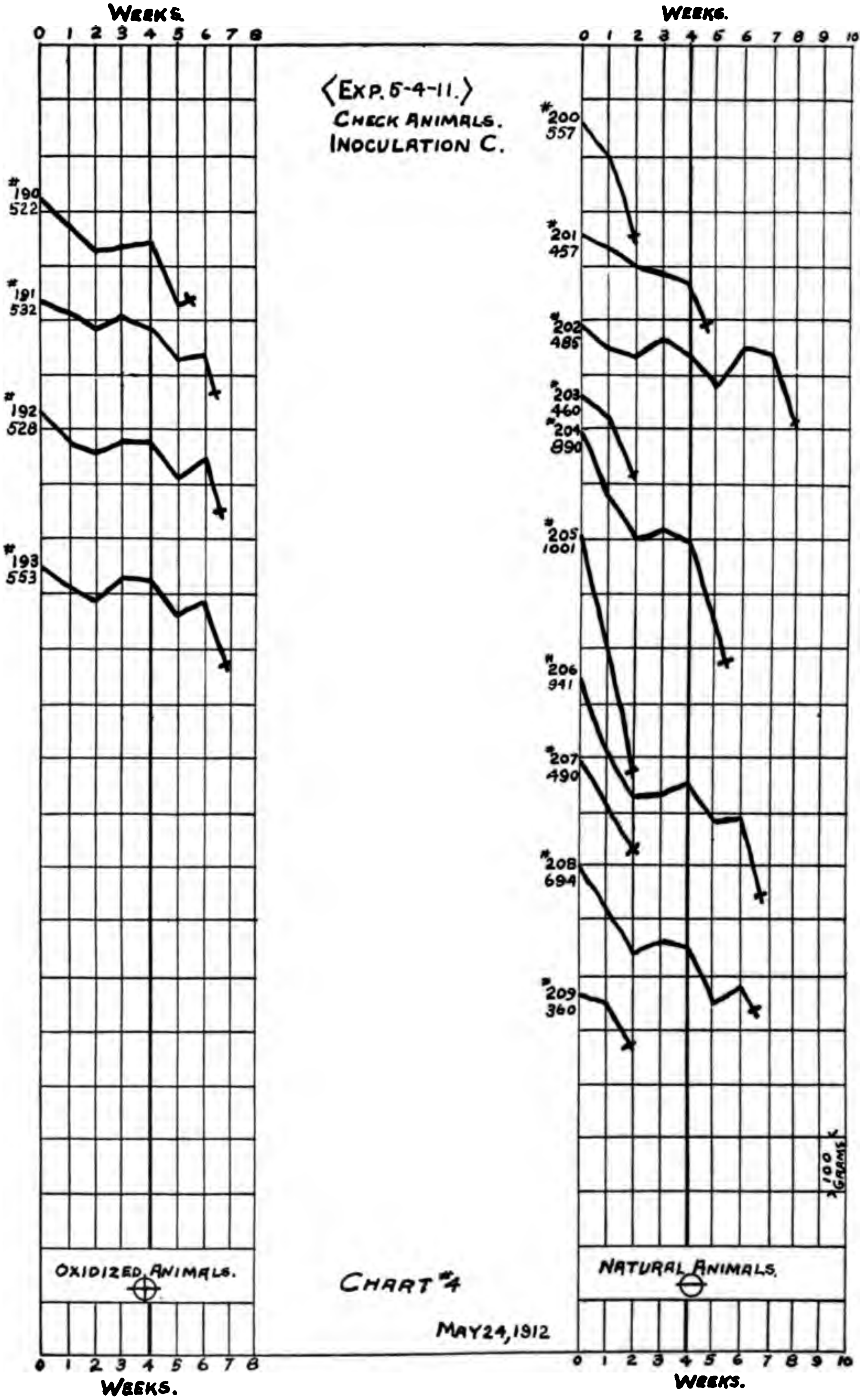
CHART NO. 6, page 194, shows the results obtained with "*A*" inoculation under two per cent. of the gas on the previously oxidized animals, the ⊕.

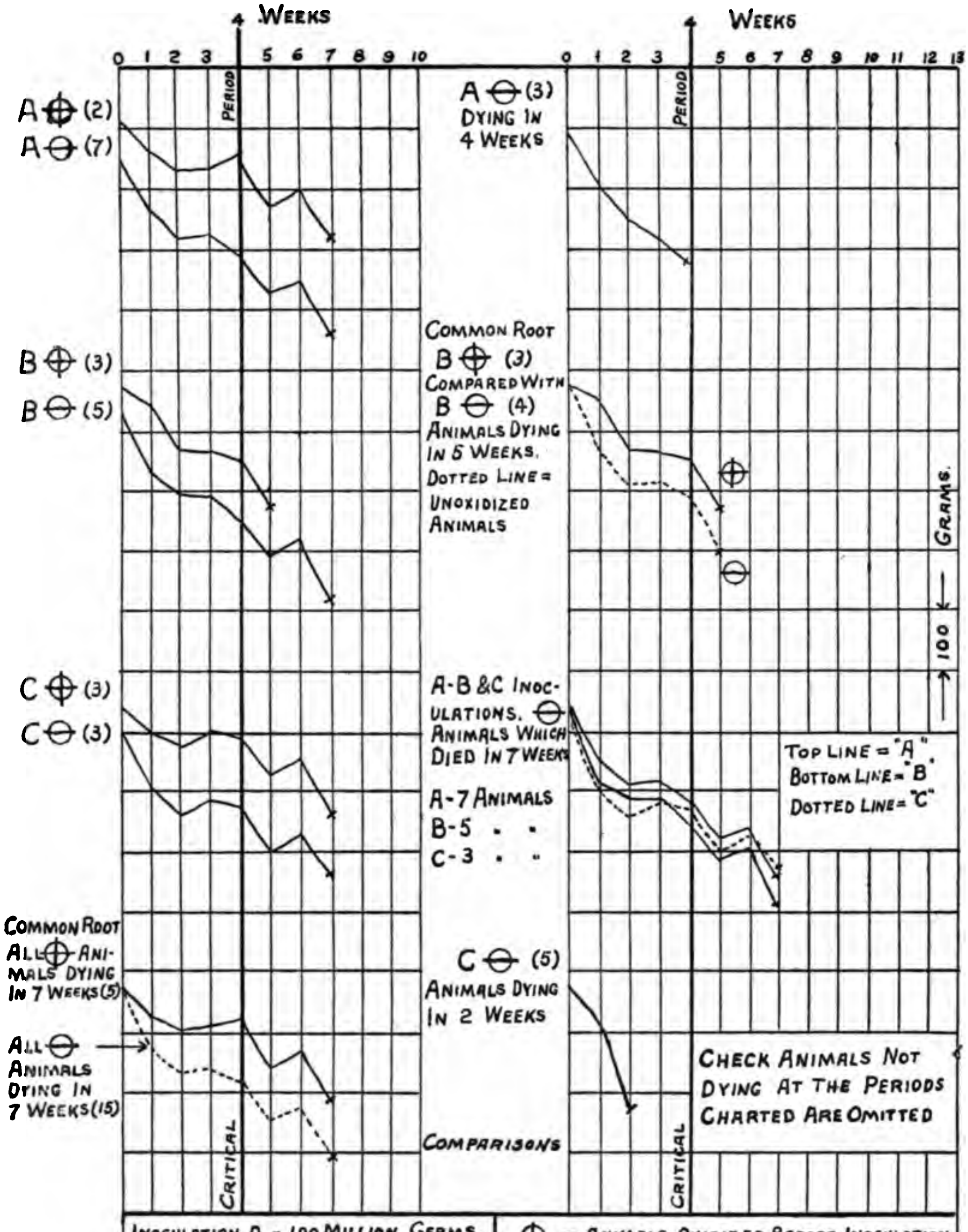
Now turn back to the corresponding check animals CHART NO. 2, page 189, and look first at it and then at this CHART NO. 6, for this matter is very important. See how all is changed, for these animals do not lose weight after inoculation but *actually spring forward to meet the foe that has been placed within their bodies. Every one of the six gains heavily in weight during the first two weeks, while every check animal lost heavily during this period. Could evidence be stronger?*

CHART NO. 7, page 196. Here we have ten natural animals corresponding to the oxidized ones shown on CHART NO. 6.

Comparing them in like manner to the check animals, their lives stretch out, their curves are placid and many strongly rising in weight, while one half of them live more than six months. Examine the record of animal No. 16. It rose from 447 grams to over 800 grams with one hundred million of the tubercle bacilli within it as a starter.

It will be found very interesting to take these records as well as those of other animals we give and compare them with animals of

WEEKS.
0 1 2 3 4 5 6 7 8
⟨EXP. 5-4-11.⟩
CHECK ANIMALS.
INOCULATION C.
WEEKS.
0 1 2 3 4 5 6 7 8 9 10
#190 522
#191 532
#192 528
#193 553
#200 557
#201 457
#202 485
#203 460
#204 890
#205 1001
#206 941
#207 490
#208 694
#209 360
100 GRAMS
OXIDIZED ANIMALS.
⊕
CHART #4
NATURAL ANIMALS.
⊖
MAY 24, 1912
0 1 2 3 4 5 6 7 8
WEEKS.
0 1 2 3 4 5 6 7 8 9 10
WEEKS.



INOCULATION A = 100 MILLION GERMS.
" " B = 50 " "
" " C = 25 " "

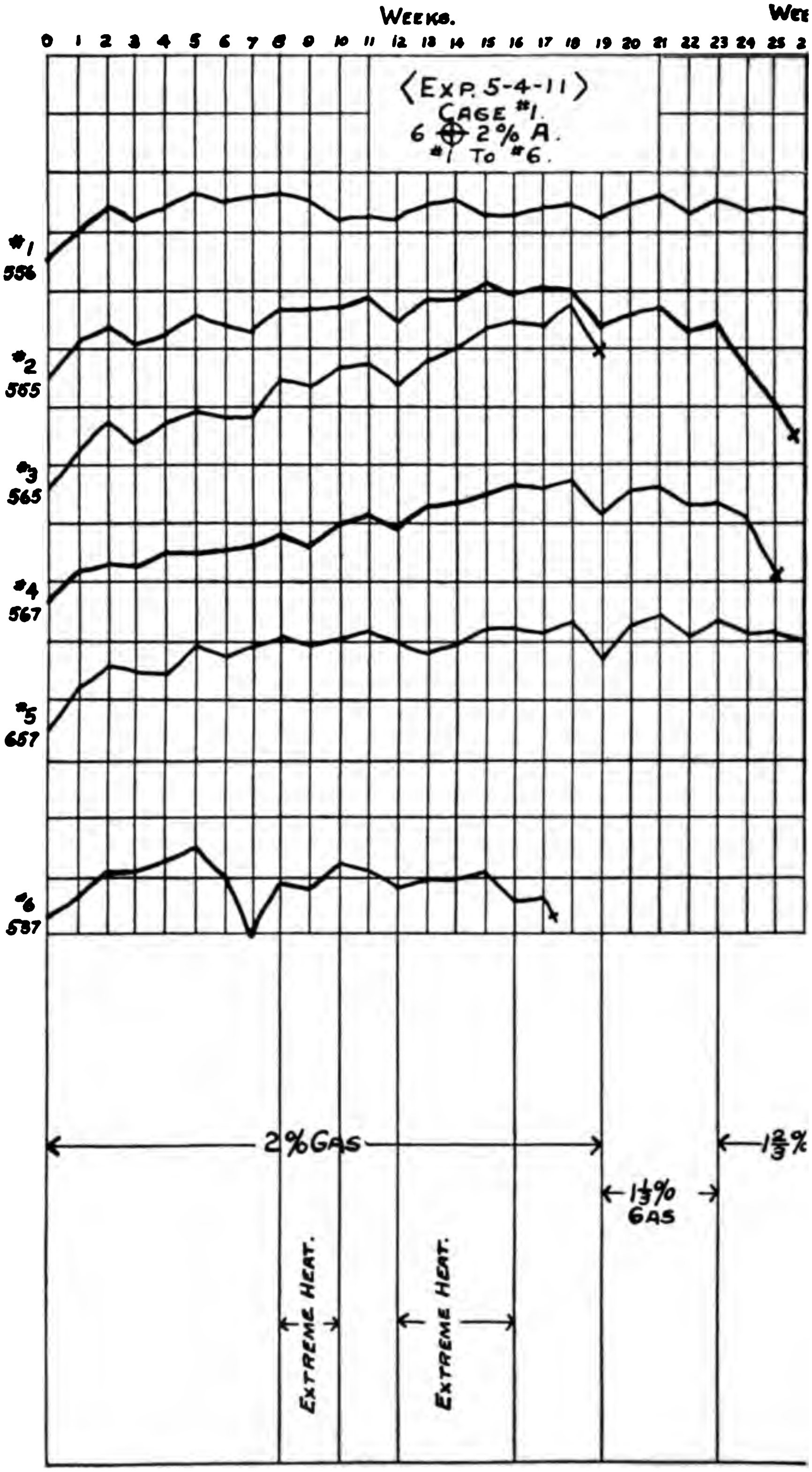
⊕ = ANIMALS OXIDIZED BEFORE INOCULATION.
⊖ = " " NOT " " "

EXAMPLES

B⊖ = "B" INOCULATION, ANIMALS NOT OXIDIZED BEFORE INOCULATION
C⊕ = "C" INOCULATION, ANIMALS OXIDIZED BEFORE INOCULATION
THE NUMBER OF ANIMALS INVOLVED IS SHOWN IN BRACKETS ( )

⟨EXPERIMENT 5-4-11⟩
CHECK ANIMALS.
CHART #5

Jas. Todd. JULY, 1911.


WEEKS.
WEE
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 2
⟨EXP. 5-4-11⟩
CAGE #1.
6 ⊕ 2% A.
#1 TO #6.
#1
556
#2
565
#3
565
#4
567
#5
657
#6
587
2% GAS
1⅓% GAS
1⅔%
EXTREME HEAT.
EXTREME HEAT.

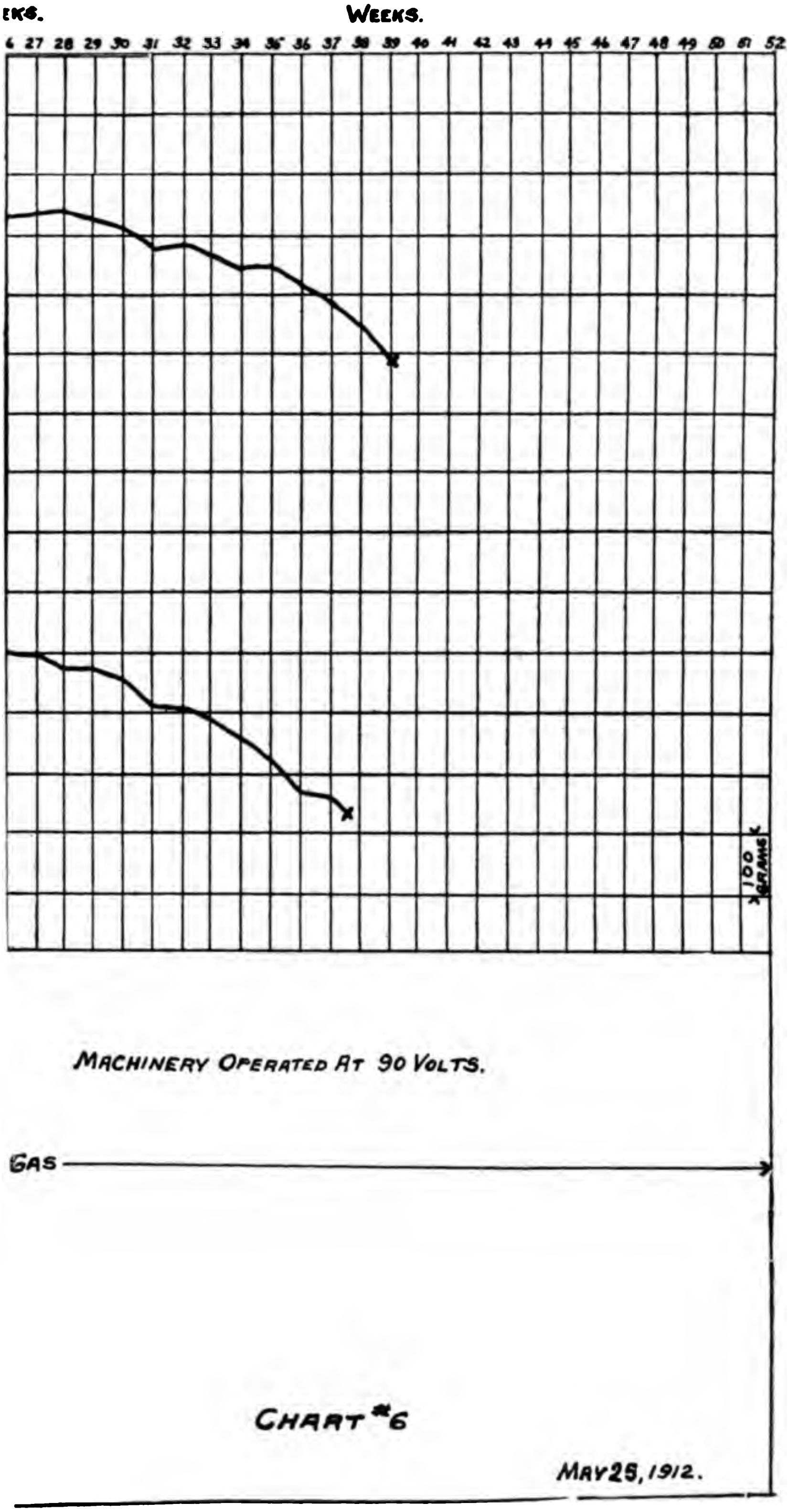
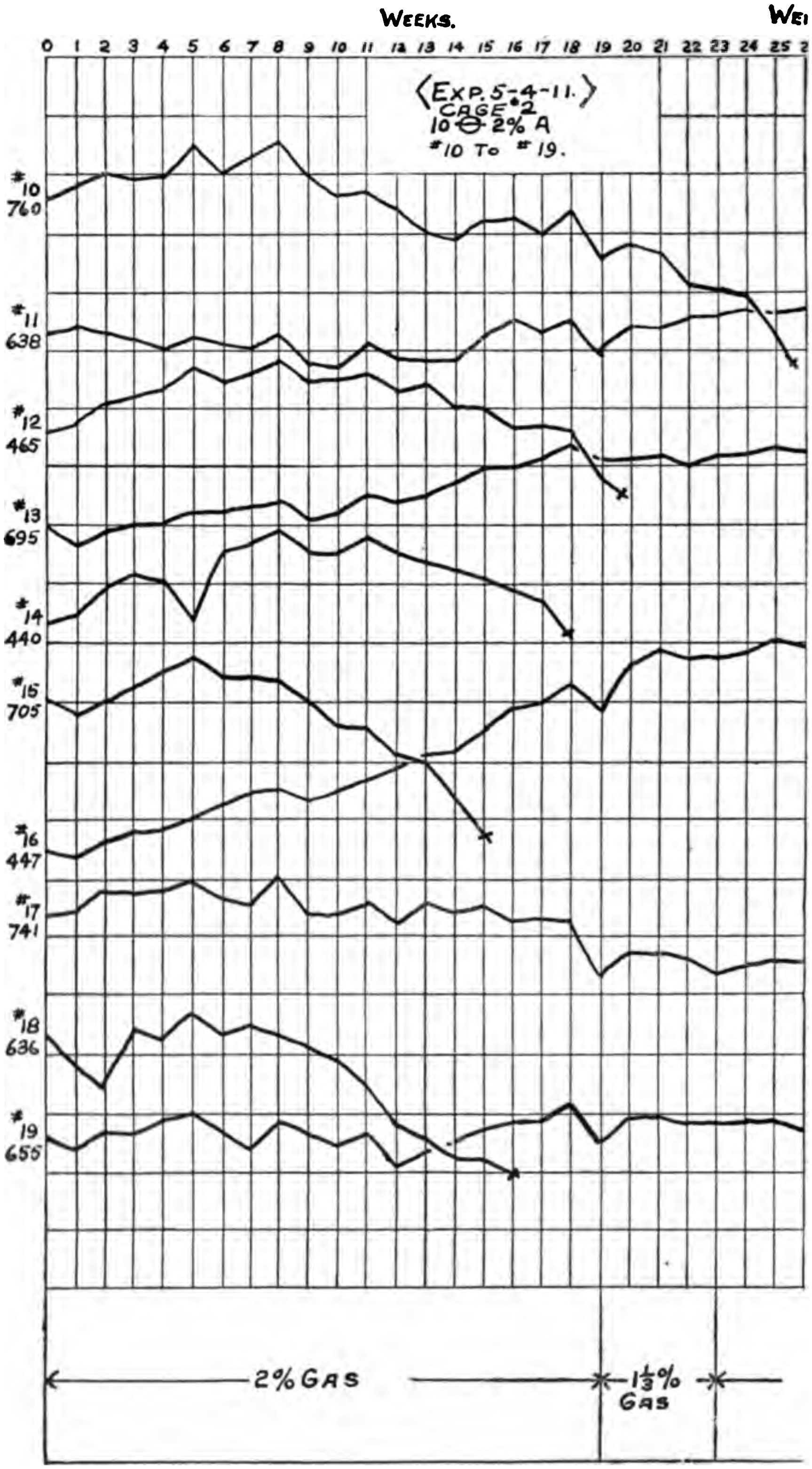


CHART #6

MAY 25, 1912.



WEEKS.
WEI
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 2
⟨EXP. 5-4-11.⟩
CAGE #2
10 ⊖ 2% A
#10 TO #19.
#10
760
#11
638
#12
465
#13
695
#14
440
#15
705
#16
447
#17
741
#18
636
#19
655
2% GAS
1⅓% GAS

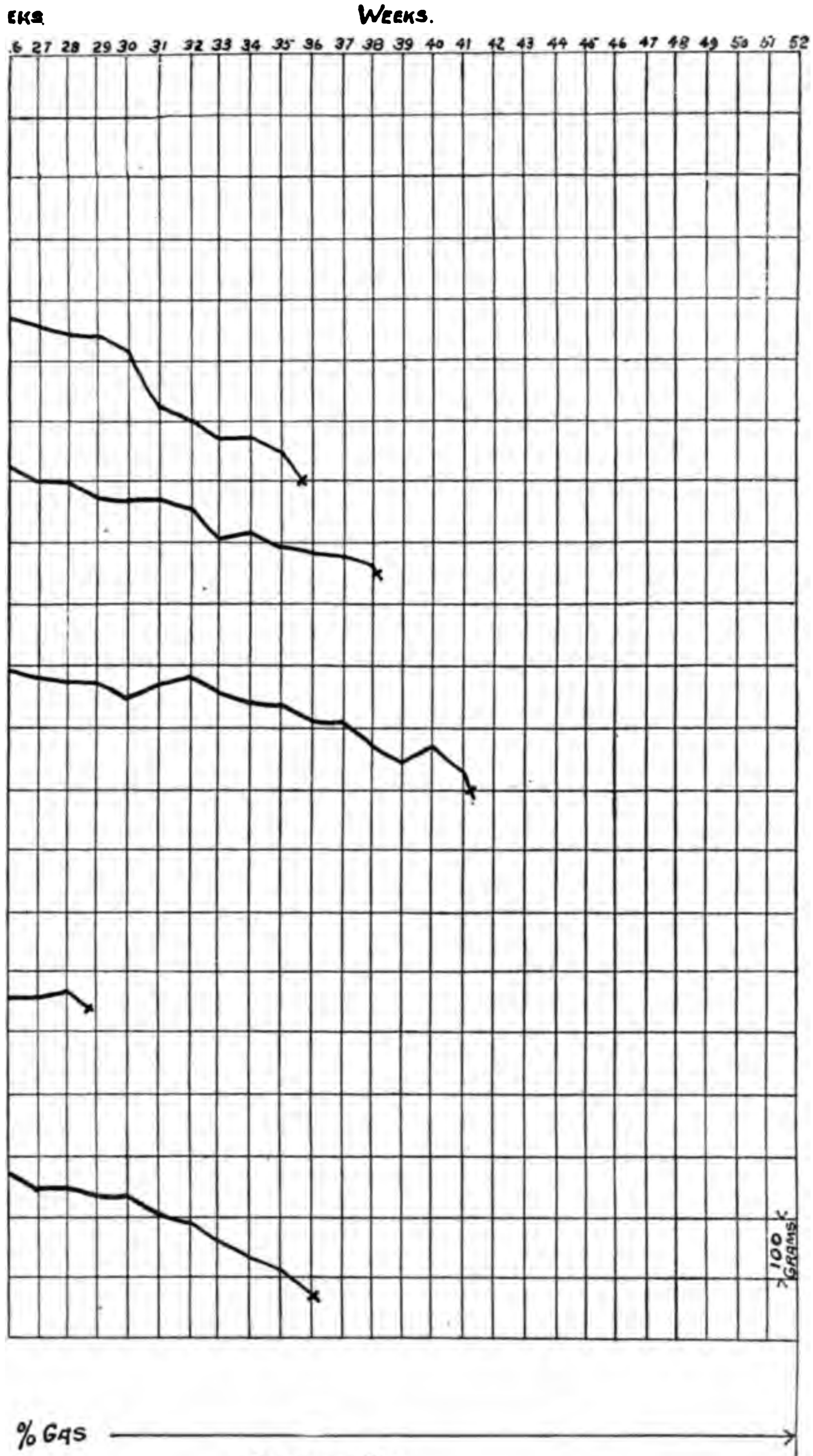


CHART #7.

MAY 27, 1912.

about the same weight, both among the check animals and in both classes of those under treatment. For instance, compare animal No. 13 on this chart with the natural check animal No. 164 on CHART NO. 2, page 189. The inoculation is the same, the weights at the time of inoculation vary only thirteen grams, so that the only difference is that one is a natural check animal, while the other is a natural animal carried in two per cent. of the gas after its inoculation.

There are numberless opportunities for striking comparisons that will occur to those interested and they will all be found to demonstrate the power of oxygen. The guinea pig is of the weakest, while man is the strongest in the animal kingdom and in this lies one of the great hopes of our process, and should never be lost sight of.

We hardly think it necessary to take time to go into the details of the difference between the O plus and the O minus as shown on CHARTS NO. 6 and NO. 7. The differences in favor of the previously oxidized animal are self-evident and oxidation establishes itself so strongly as not to need argument.

And now to accomplish our wish to deliver our work free from unnecessary argument and as tersely as possible, we are here giving without one word of explanation, argument or comment, ten drawings (CHARTS NO. 8 to NO. 17 inclusive, pages 200 to 219) covering the individual records of eighty animals, including thirty of the previously oxidized, all inoculated and treated as shown by the drawings and we ask that you form your own conclusions from a study of each animal as a fair exchange for the years we have given to the work. This is a striking test of the work, to throw it upon the table alone. We do so because we know its inherent strength.

In examining the drawings, please bear in mind that three per cent. of the gas is depressive to the animals plunged into it and that due allowance must be made for this fact when considering the results.

A study of these curves convinces us that we have recovered much of the ground lost in the November Experiment. Our work is not yet up to the record made in the first experiments, but we have it well in hand and do not again lose our control.

We will now proceed to the study of the autopsies, for they contain much information of value.

CHART NO. 18, page 221. On this one drawing are the complete autopsies of the forty-one check animals. They are purposely placed in the rotation of their death. The first six animals, as shown by the length of their life lines, died in two weeks. The disease is here strictly limited, only appearing at the point of inoculation.

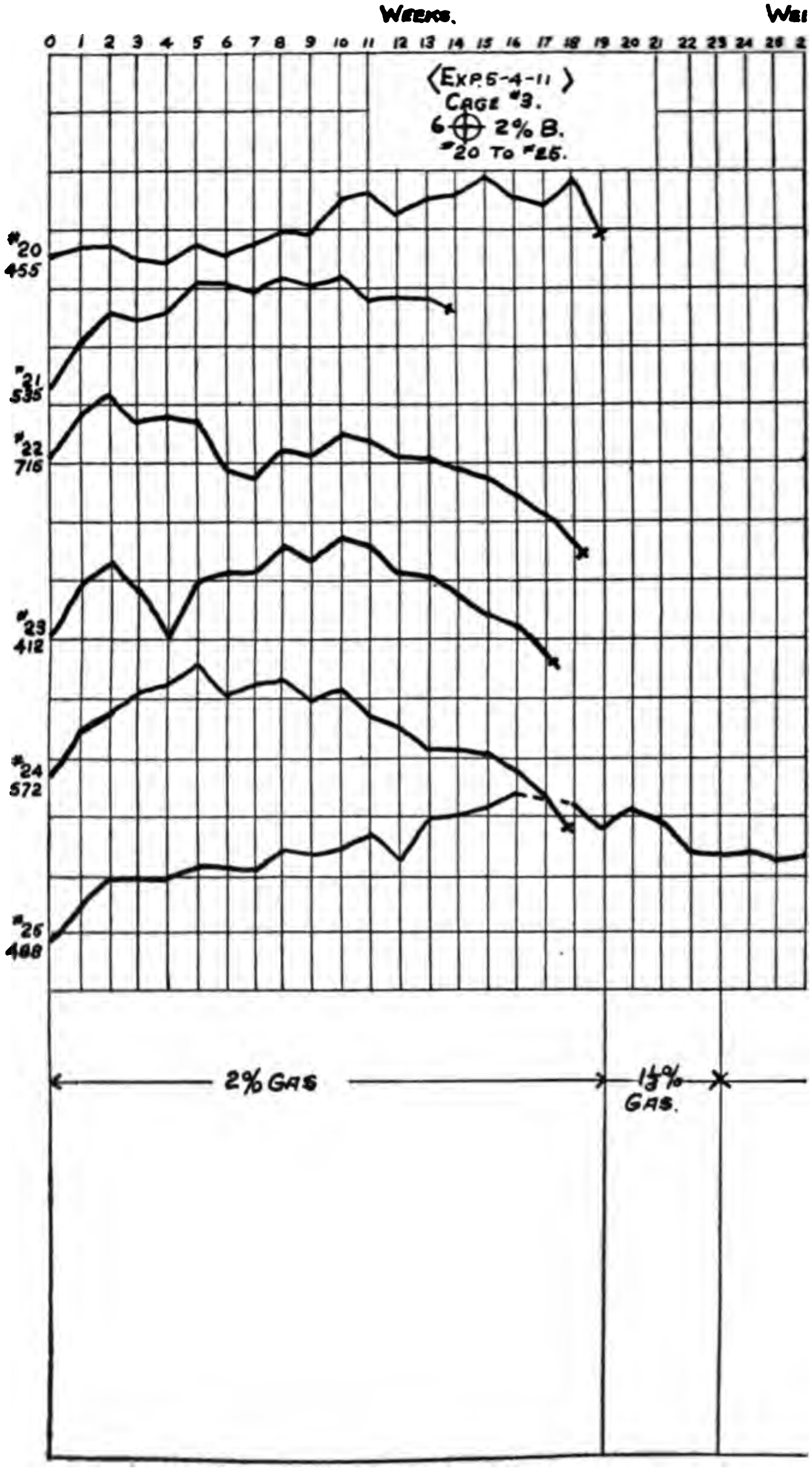
This fact bears out the record of the check animals in the January Experiment, all of which died within a few days and without tubercular lesions, showing that the disease can kill without tubercular destruction.

It also bears strongly upon the cause of death in the August Experiment for the same reason, none of the animals showing any evidence of tubercular destruction.

Commencing at animal No. 160, we have the record of seven animals dying one month after inoculation. Here we have heavy tubercular destruction in the glands throughout the body and the disease strongly present in the spleen and the liver. It is at this time that the animals were struck the tremendous blow; the critical period that we have so frequently spoken of, and which is here shown to be at the time of general involvement of the vital organs.

It is notable that all the animals dying in the period from the fourth to the eighth week show practically the same autopsies.

The last animal on the drawing, No. 171, was an O plus animal, "*B*" inoculation. This animal lived ten weeks after all the others were dead and the autopsy shows every organ in the last stages of destruction. A superficial view of this animal's record would, doubtless, lead to the conclusion that the oxygen to which he was exposed


Weeks.
Wei
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
26
⟨Exp. 5-4-11⟩
Cage #3.
6 ⊕ 2% B.
#20 to #25.
#20
455
#21
535
#22
716
#23
412
#24
572
#25
488
2% Gas
1 1/3 %
Gas.

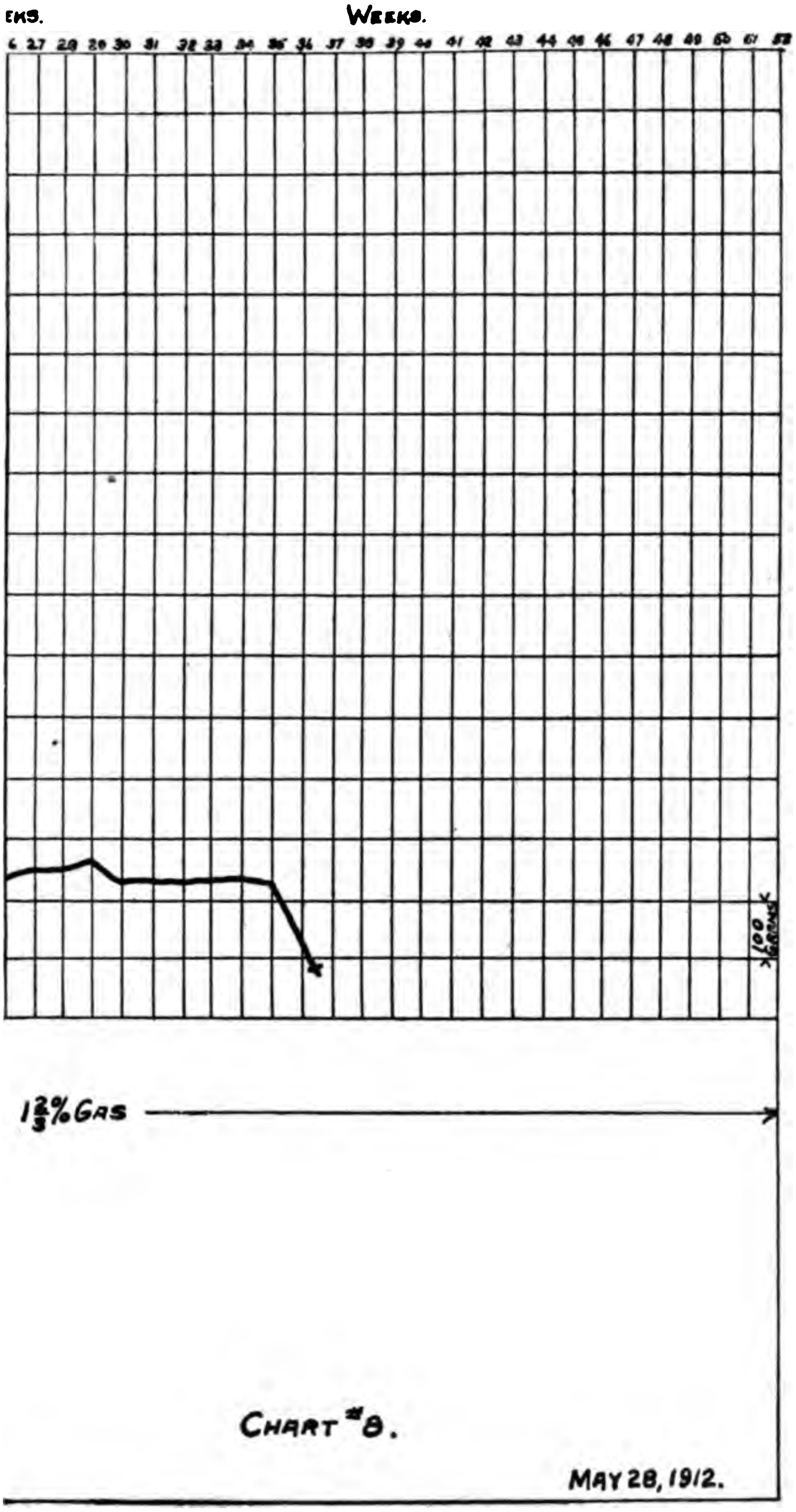
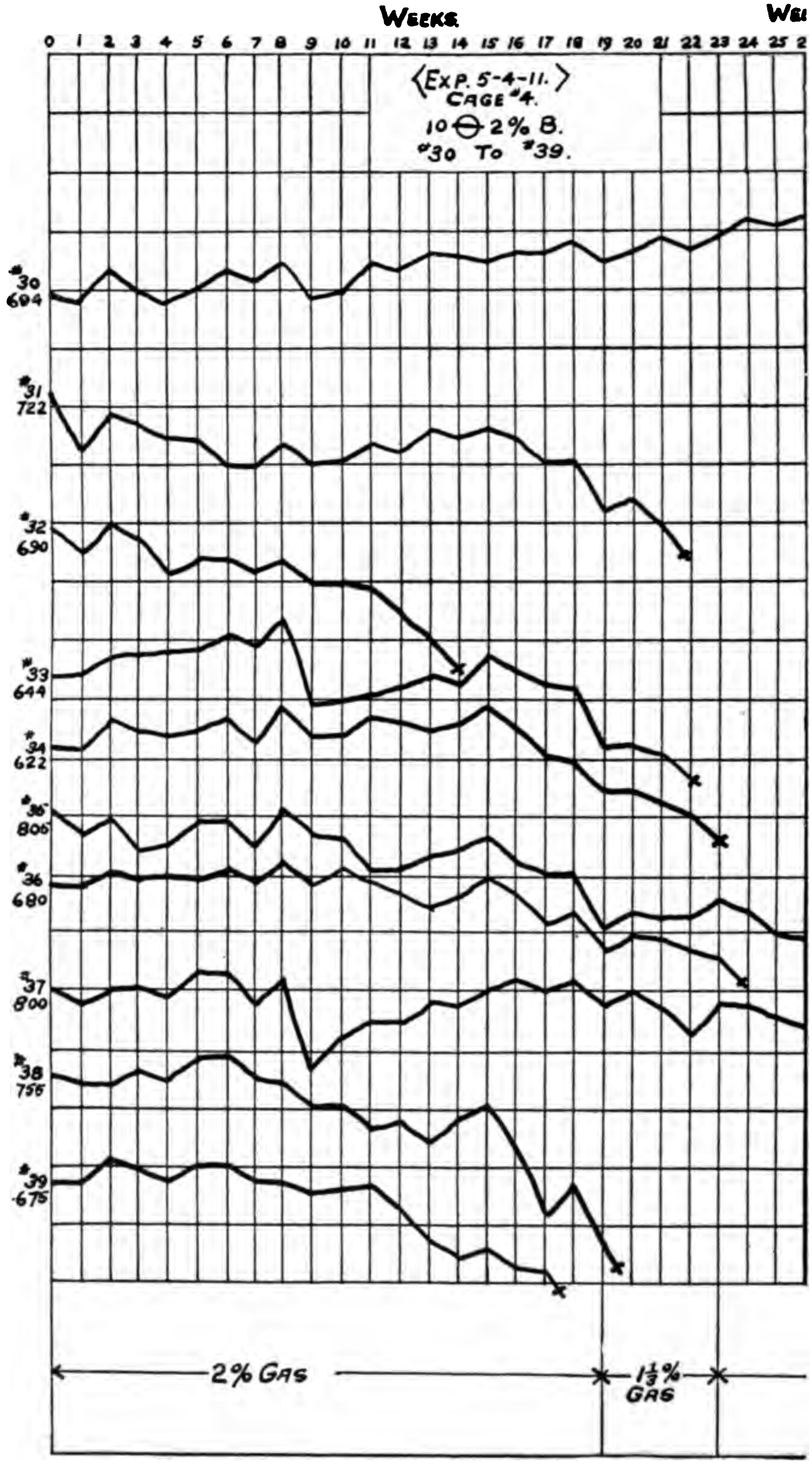


CHART #8.

MAY 28, 1912.


WEEKS
WE
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 2
⟨EXP. 5-4-11.⟩
CAGE #4.
10 ⊖ 2% B.
#30 TO #39.
#30
694
#31
722
#32
690
#33
644
#34
622
#35
806
#36
680
#37
800
#38
755
#39
675
2% GAS
1⅓%
GAS

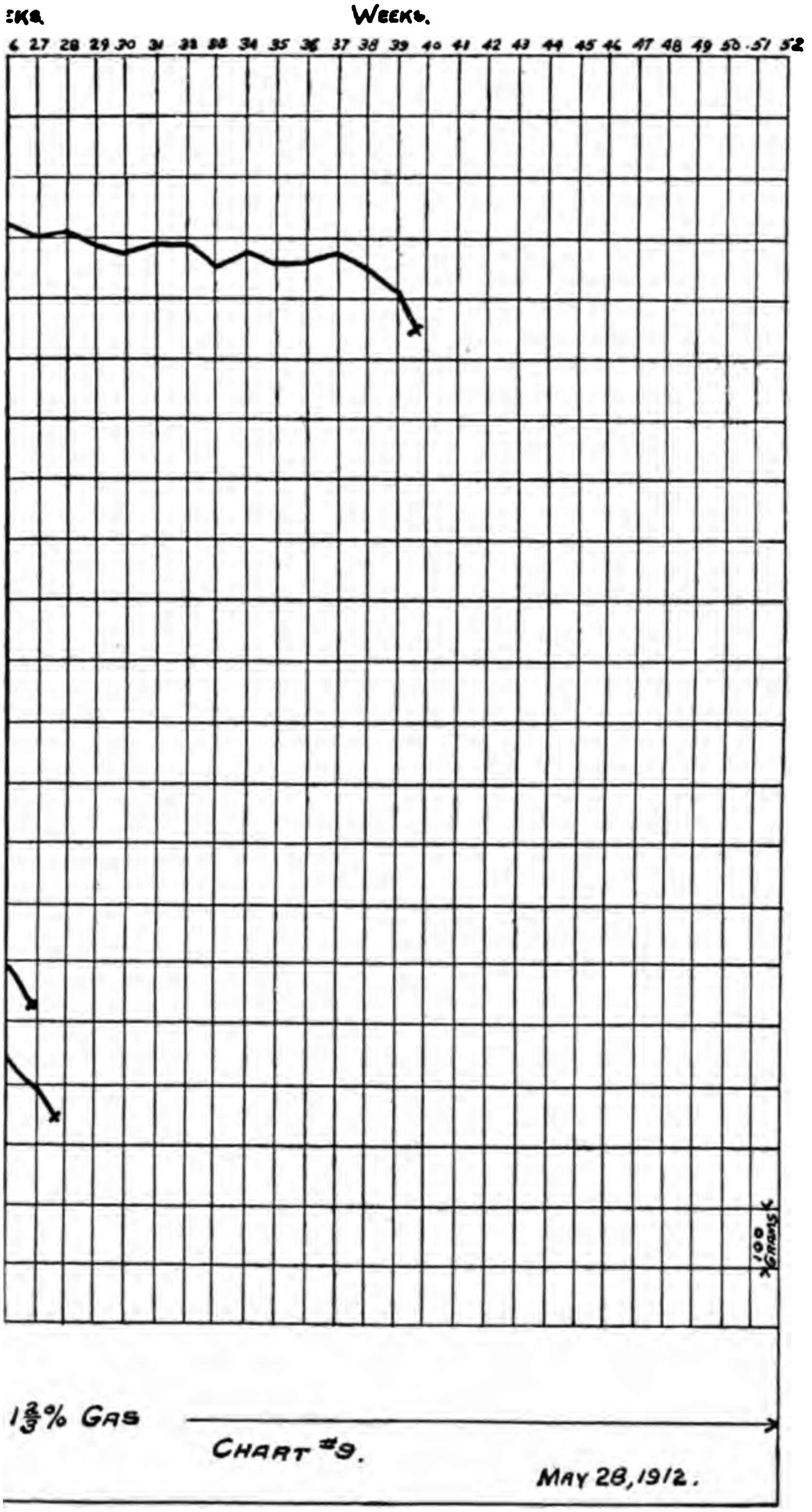
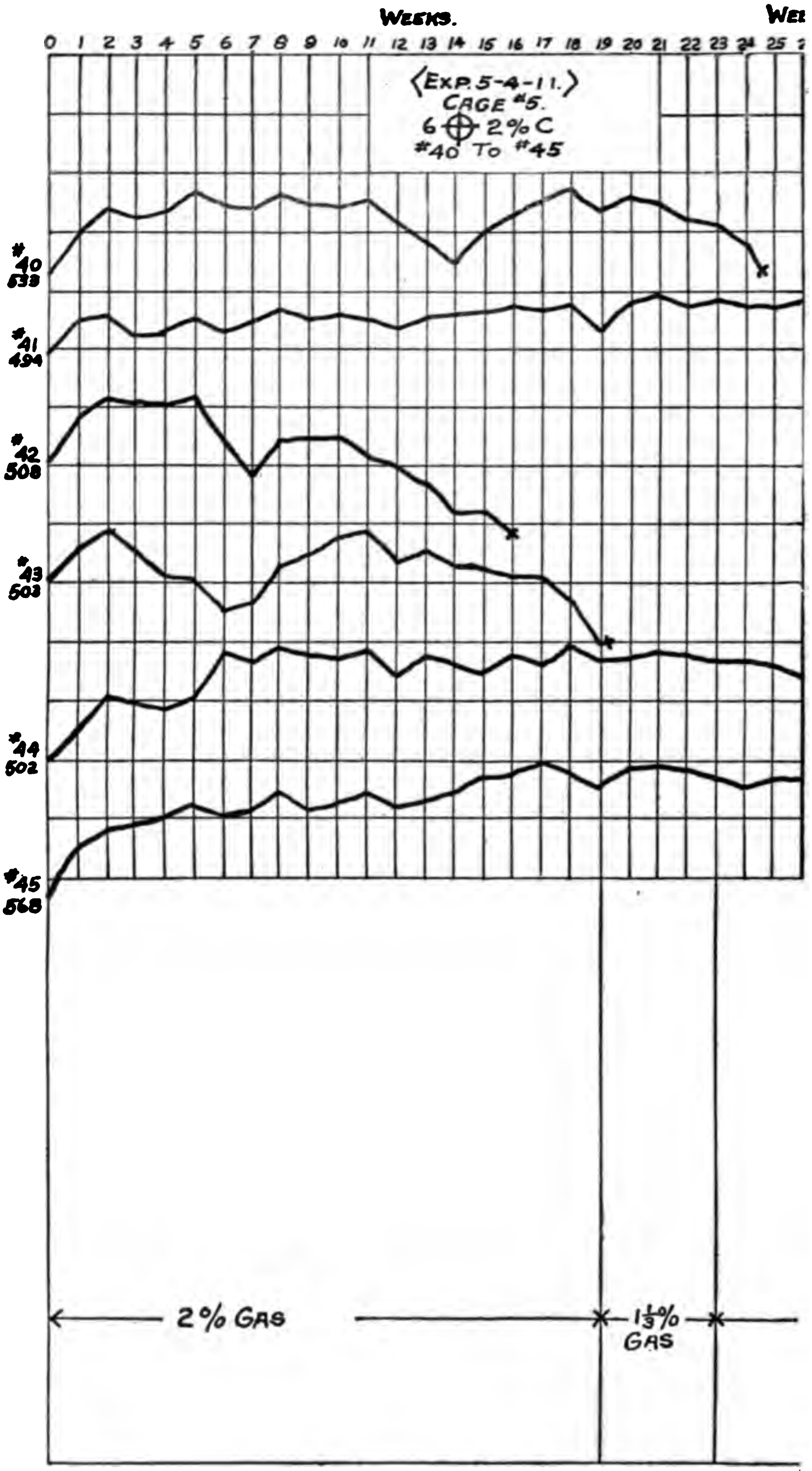


CHART #9.

MAY 28, 1912.


Weeks.
Wee
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
⟨Exp. 5-4-11.⟩
Cage #5.
6 ⊕ 2% C
#40 To #45
#40 533
#41 494
#42 508
#43 503
#44 502
#45 568
2% Gas
1⅓% Gas

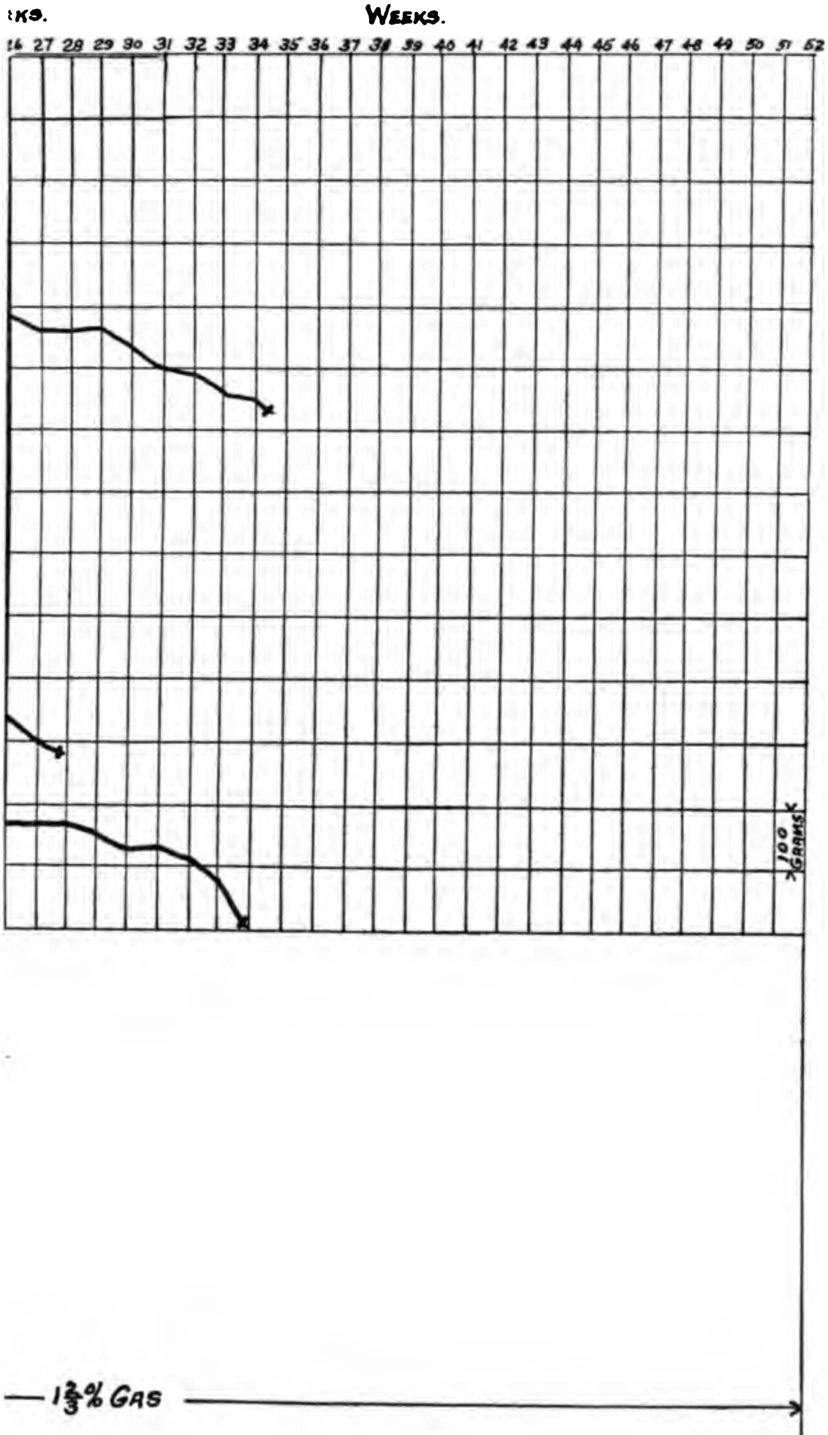
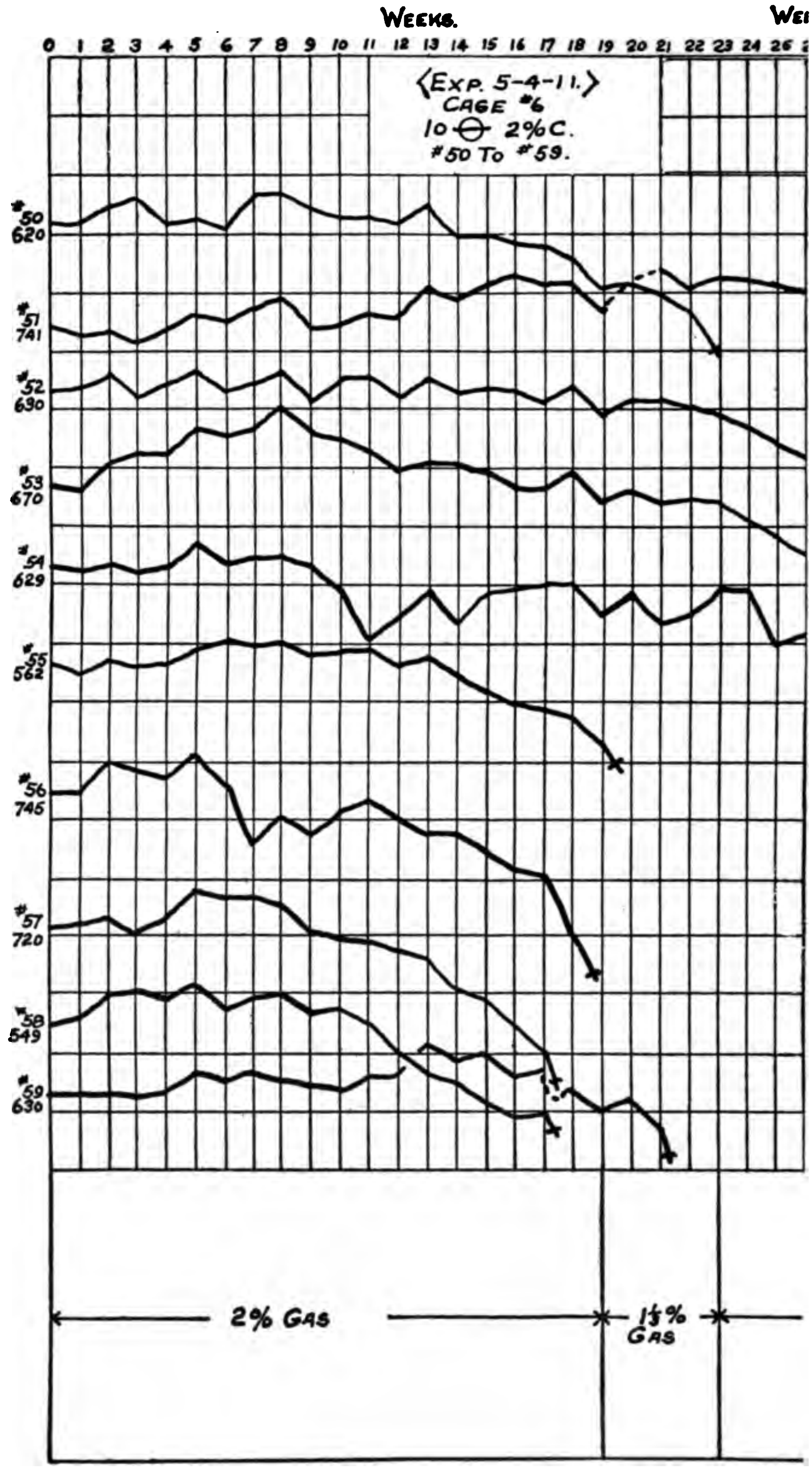


CHART #10.

MAY 29, 1912.


Weeks.
Wei
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 26
⟨Exp. 5-4-11.⟩
Cage #6
10 ⊖ 2%C.
#50 To #59.
#50 620
#51 741
#52 690
#53 670
#54 629
#55 562
#56 745
#57 720
#58 549
#59 630
2% Gas
1⅓% Gas

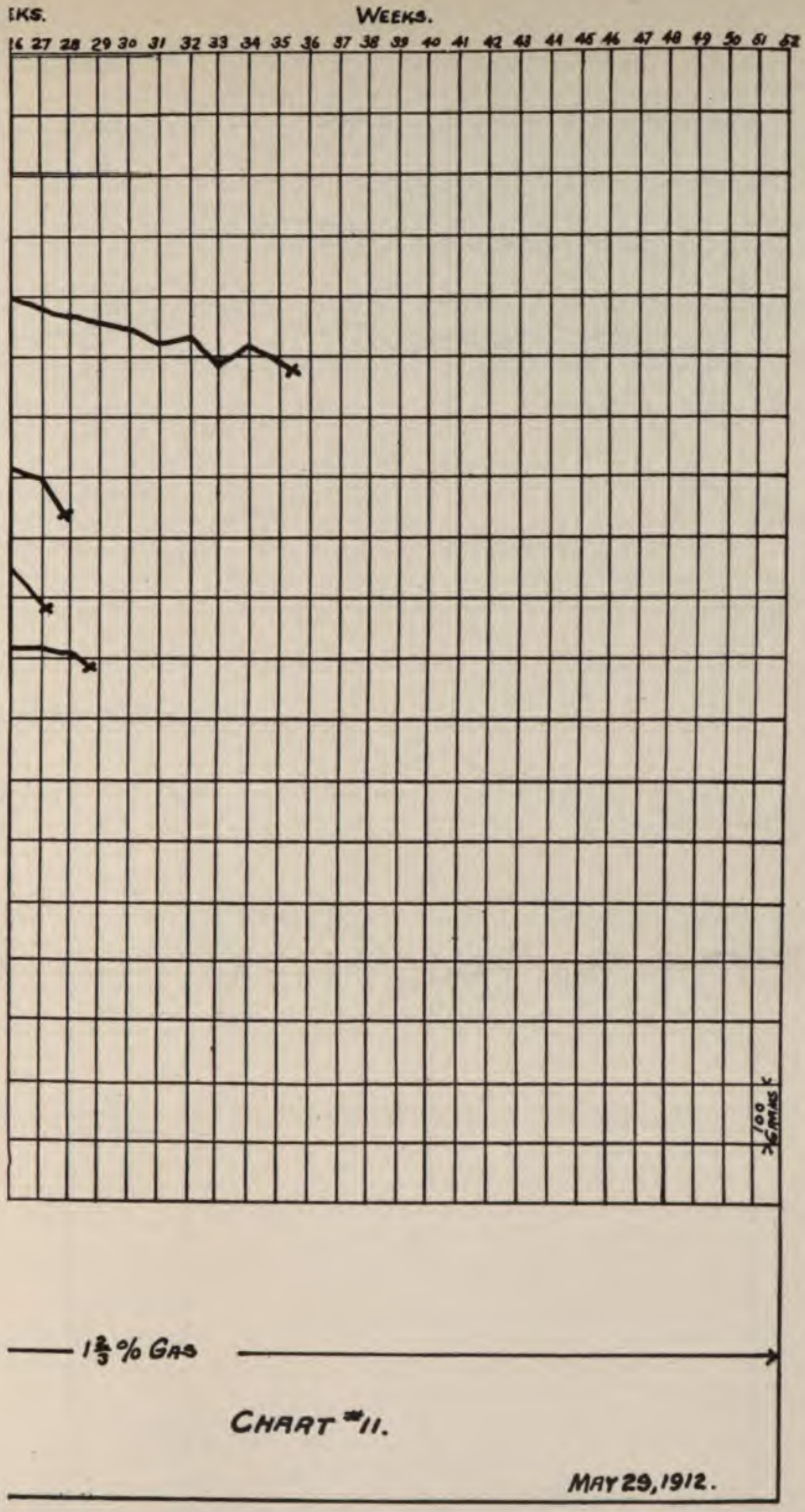
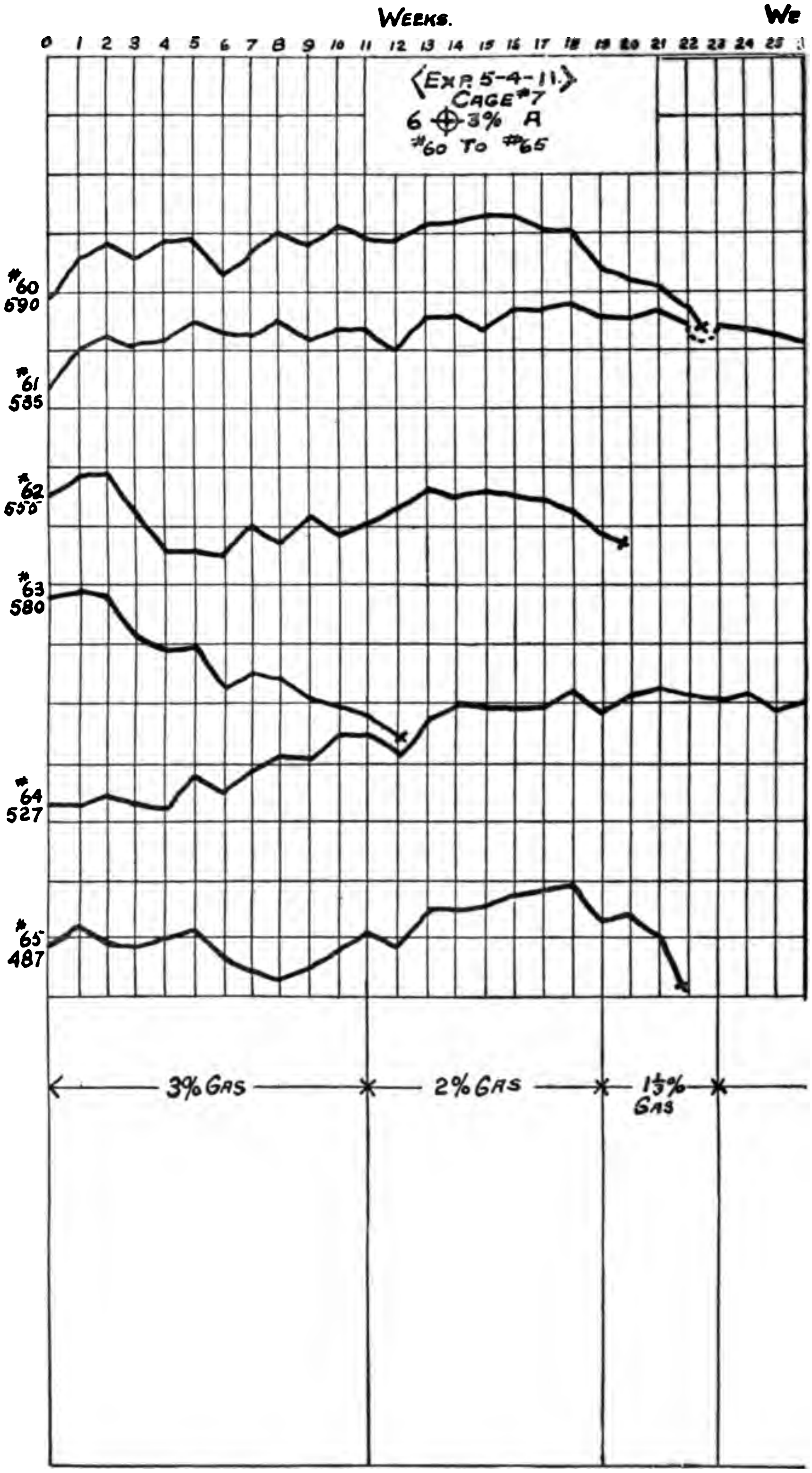


CHART #11.

MAY 29, 1912.


Weeks.
We
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
⟨Exp. 5-4-11.⟩
Cage #7
6 ⊕ 3% A
#60 To #65
#60 690
#61 585
#62 550
#63 580
#64 527
#65 487
3% Gas
2% Gas
1⅓% Gas

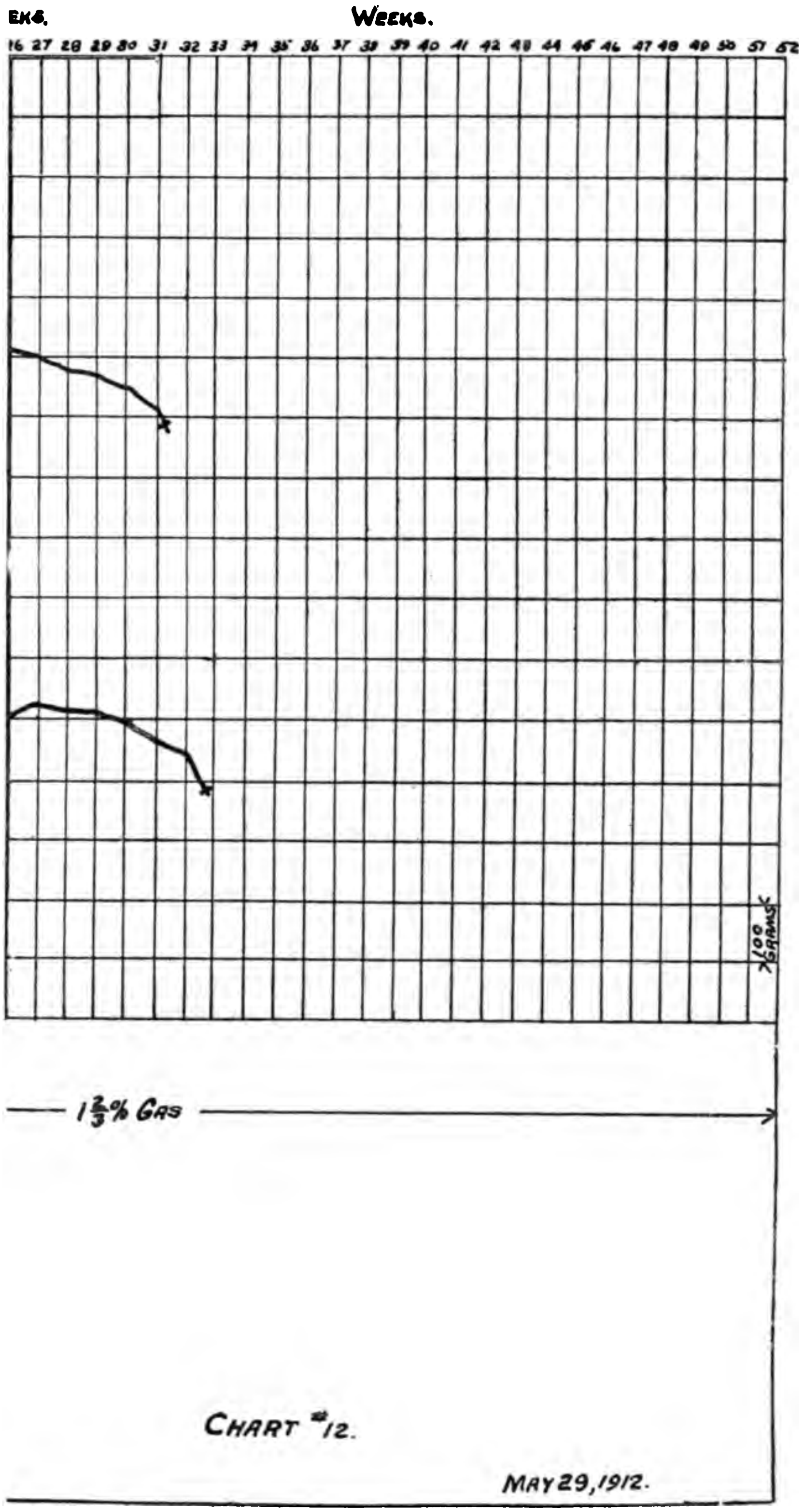
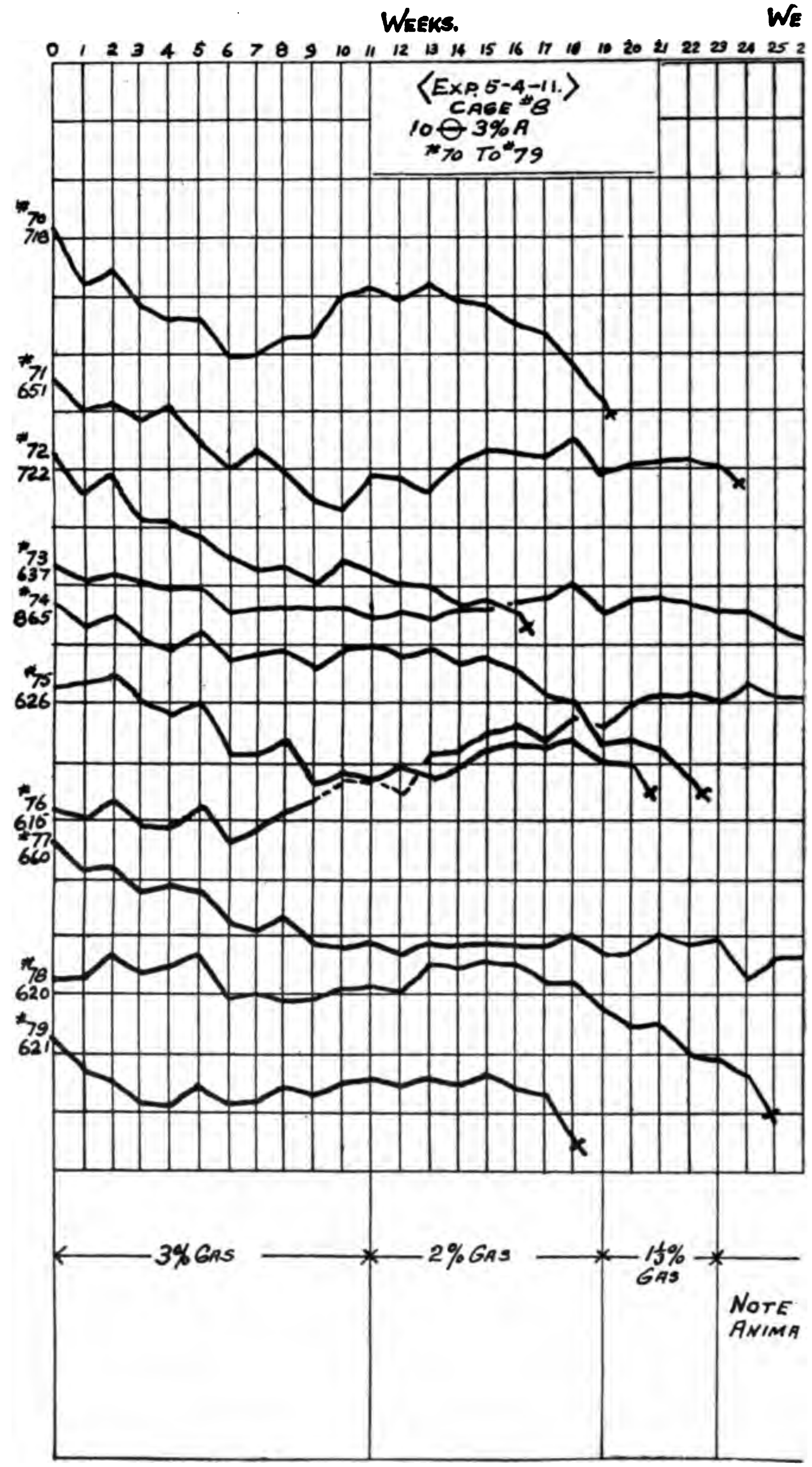
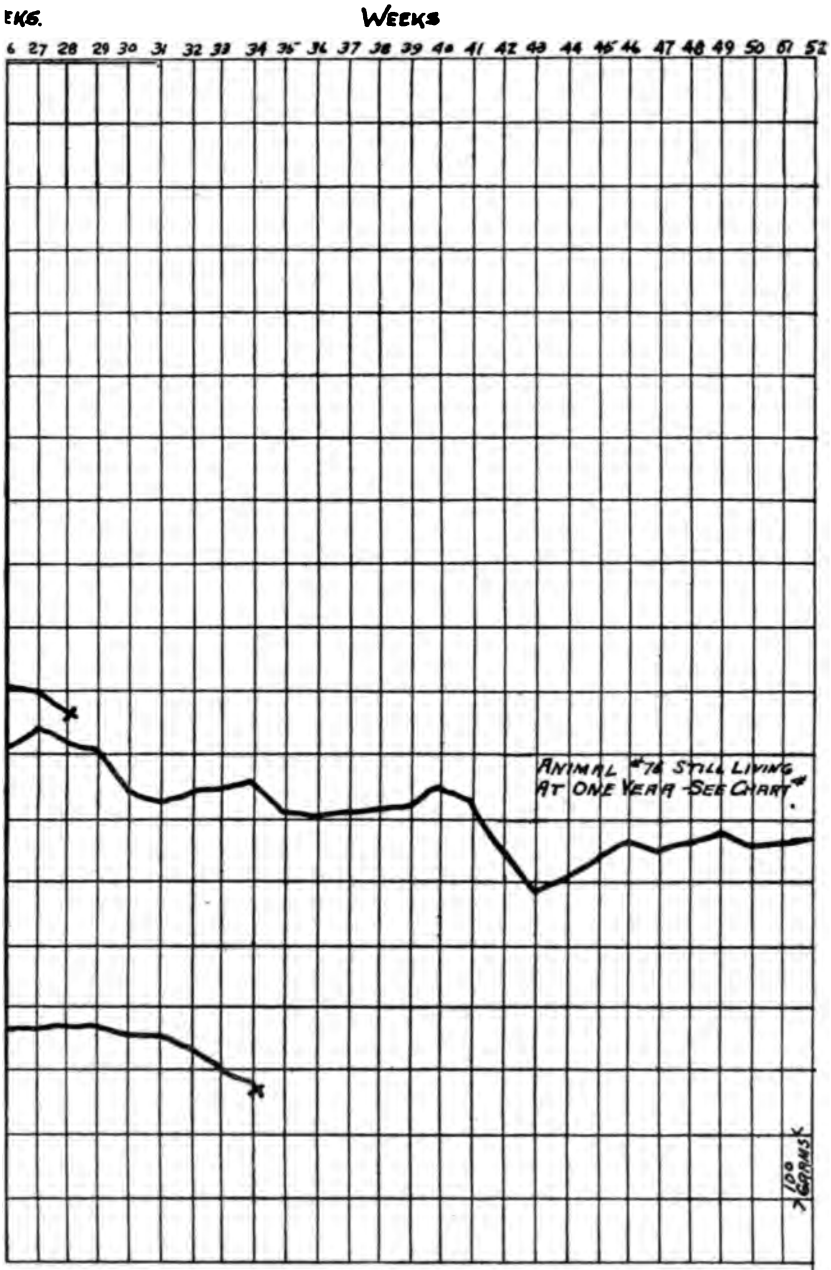


CHART #12.

MAY 29, 1912.


WEEKS.
WE
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 2
⟨EXP. 5-4-11.⟩
CAGE #8
10 ⊖ 3% A
#70 TO #79
#70 718
#71 651
#72 722
#73 637
#74 865
#75 626
#76 616
#77 660
#78 620
#79 621
3% GAS
2% GAS
1½% GAS
NOTE
ANIMA

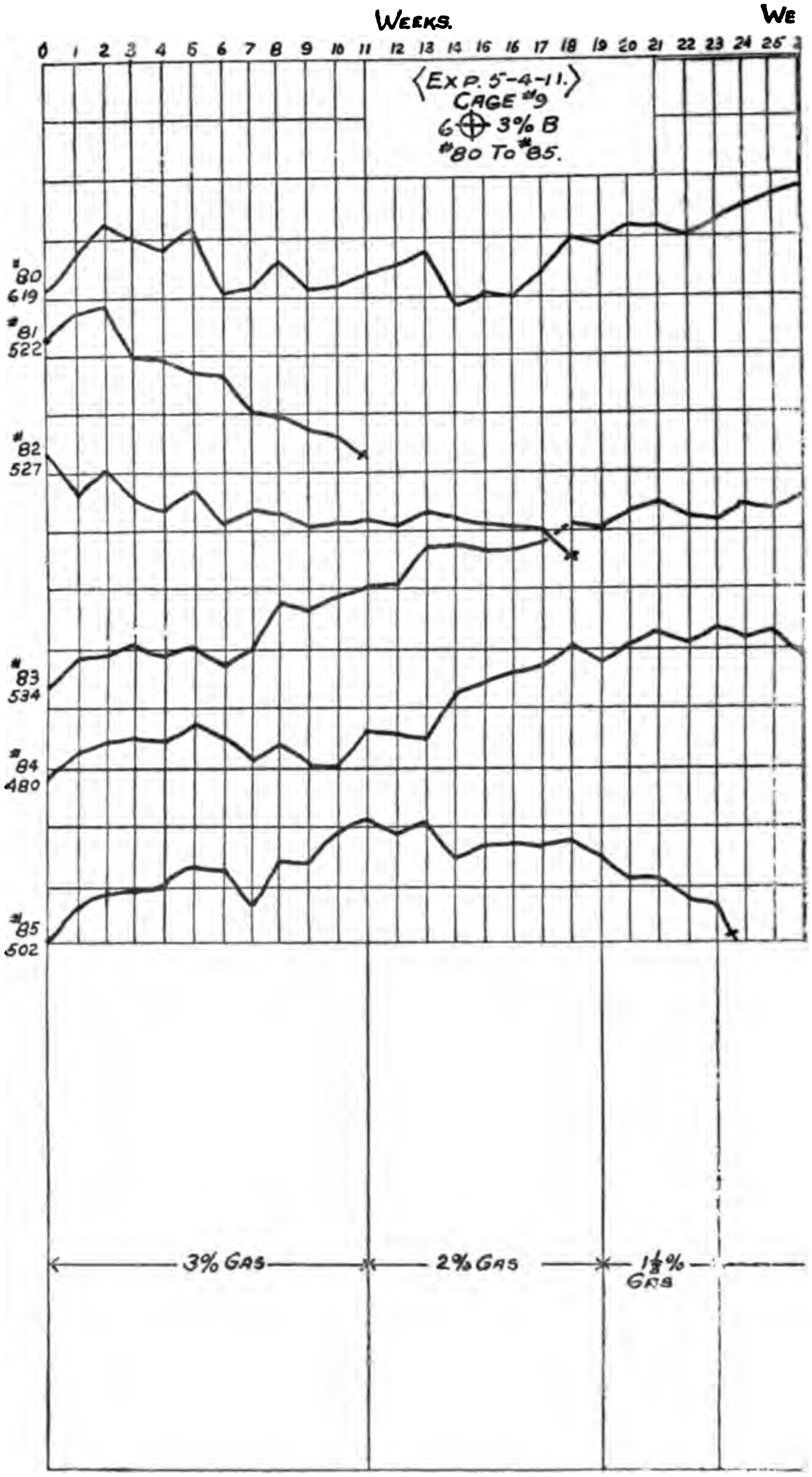


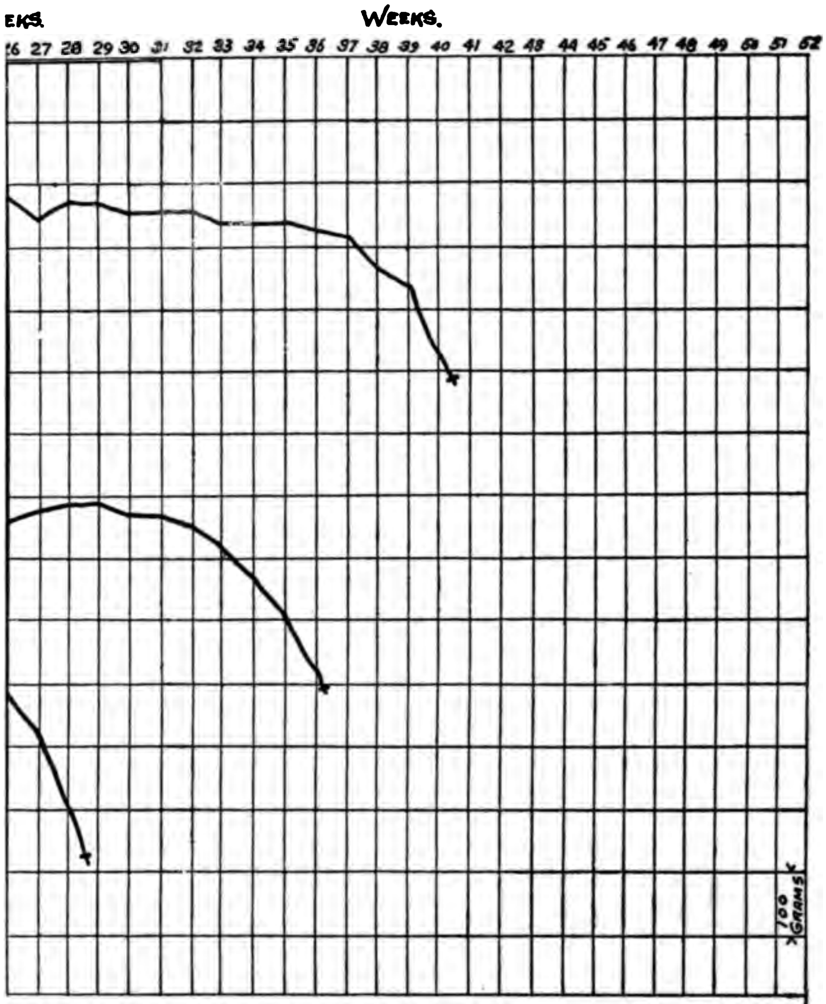
- 1⅔% GAS →

DEPRESSIVE CURVE IN 3% GAS COMPARED TO THE EQUIVALENT
LS IN 2% GAS.

CHART #13.

MAY 29, 1912


WEEKS.
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 16 16 17 18 19 20 21 22 23 24 25
⟨EXP. 5-4-11.⟩
CAGE #9
6 ⊕ 3% B
#80 TO #85.
#80
619
#81
522
#82
527
#83
534
#84
480
#85
502
3% GAS
2% GAS
1⅓%
GAS

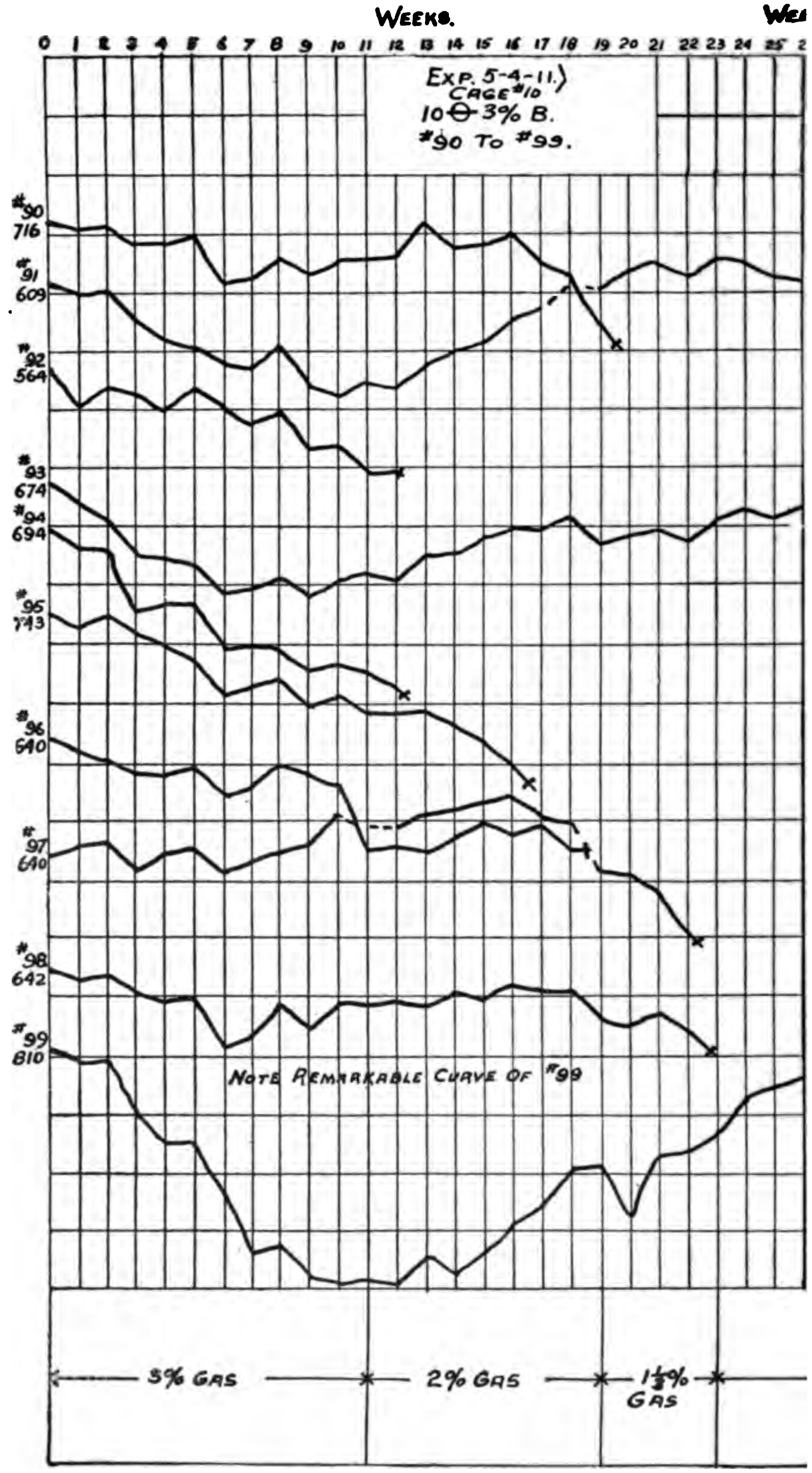


THESE CURVES WOULD SEEM TO INDICATE THAT THE INOCULATION OF INTERMEDIATE STRENGTH IS THE MOST DESTRUCTIVE.

— $1\frac{2}{3}$% GAS →

CHART #14.

MAY 31, 1912.



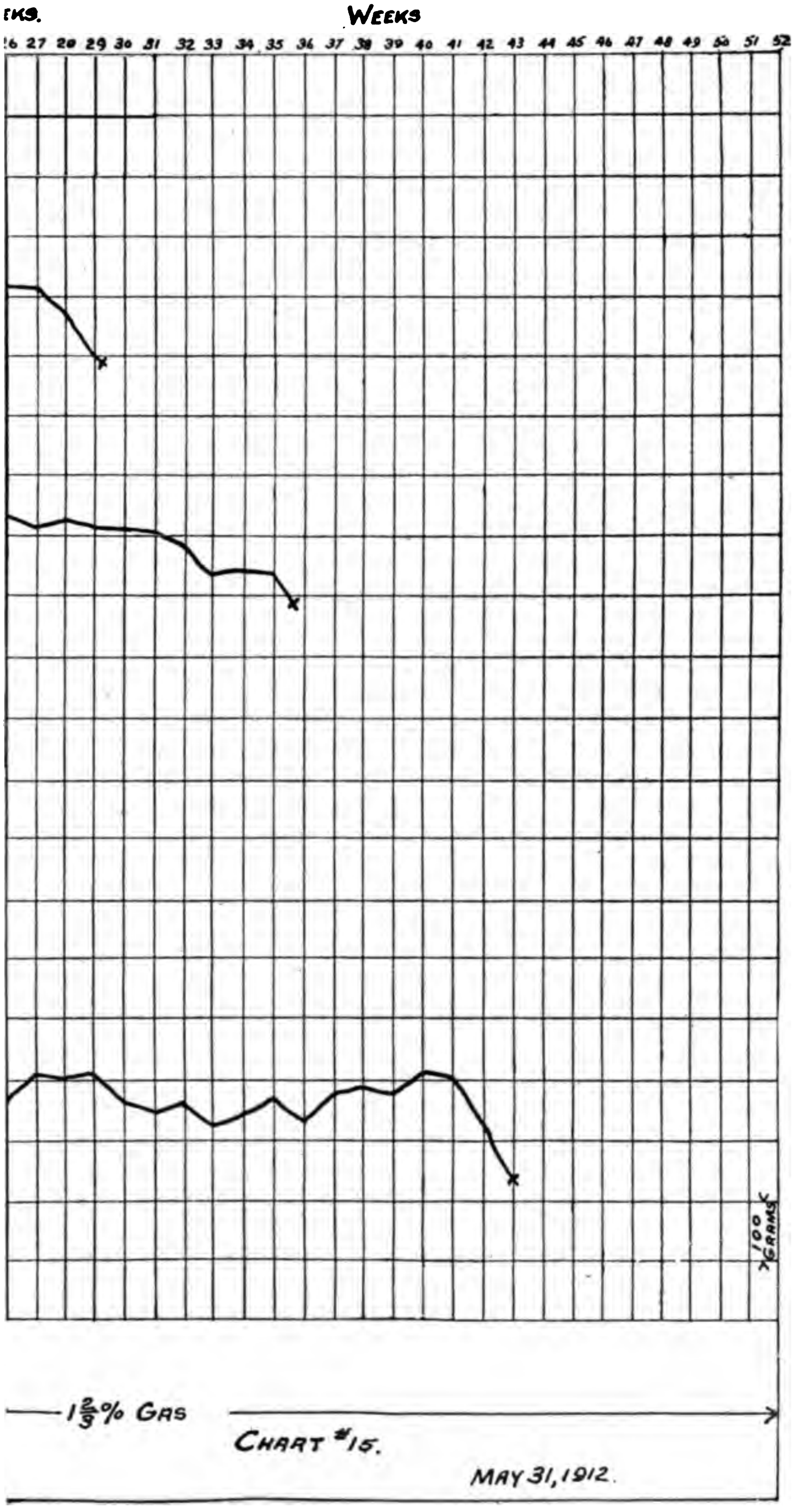
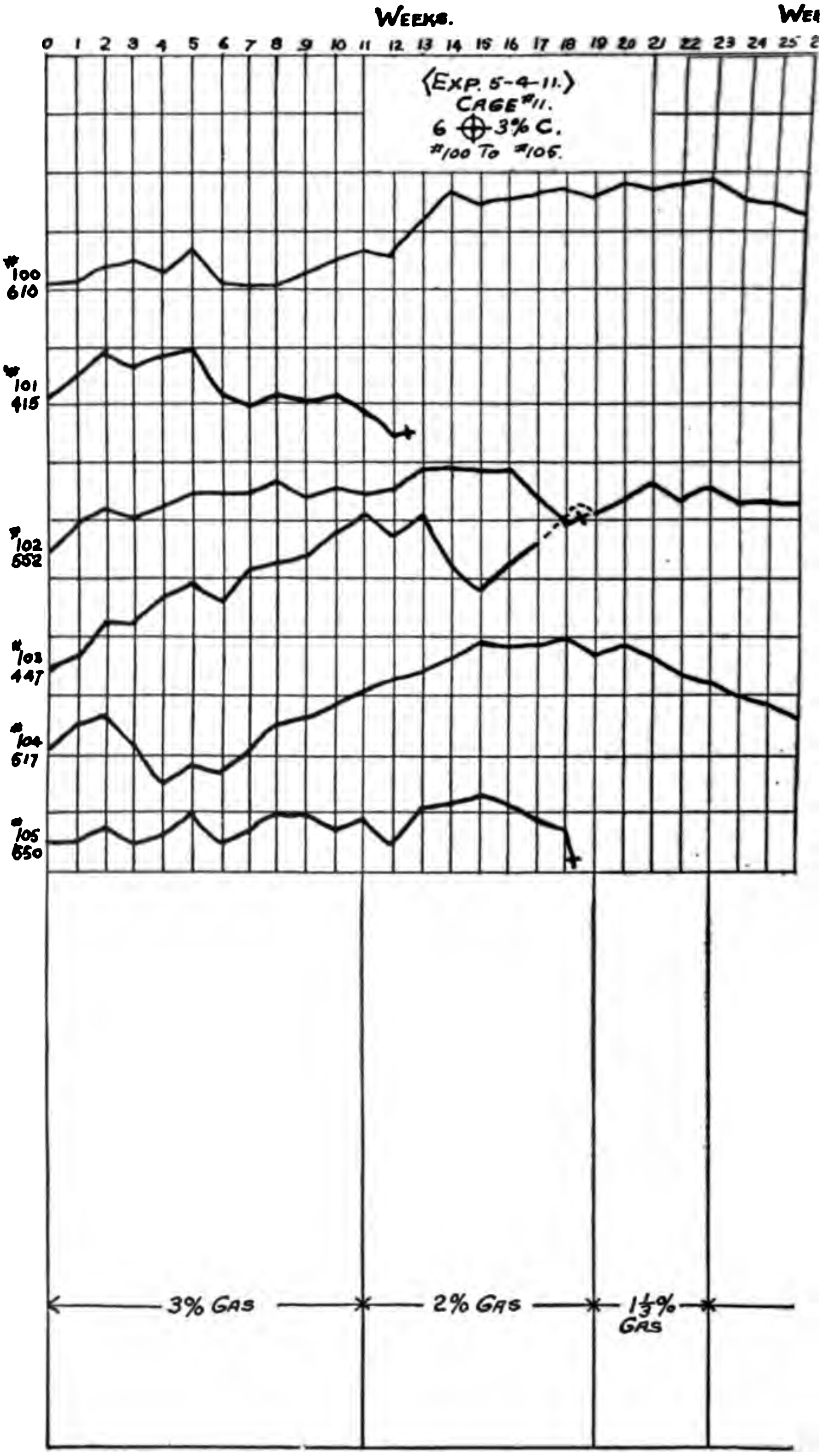


CHART #15.

MAY 31, 1912.



Weeks.
We
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 2
⟨Exp. 5-4-11.⟩
Cage #11.
6 ⊕ 3% C.
#100 To #105.
#100
610
#101
415
#102
552
#103
447
#104
517
#105
550
3% Gas
2% Gas
1⅓% Gas

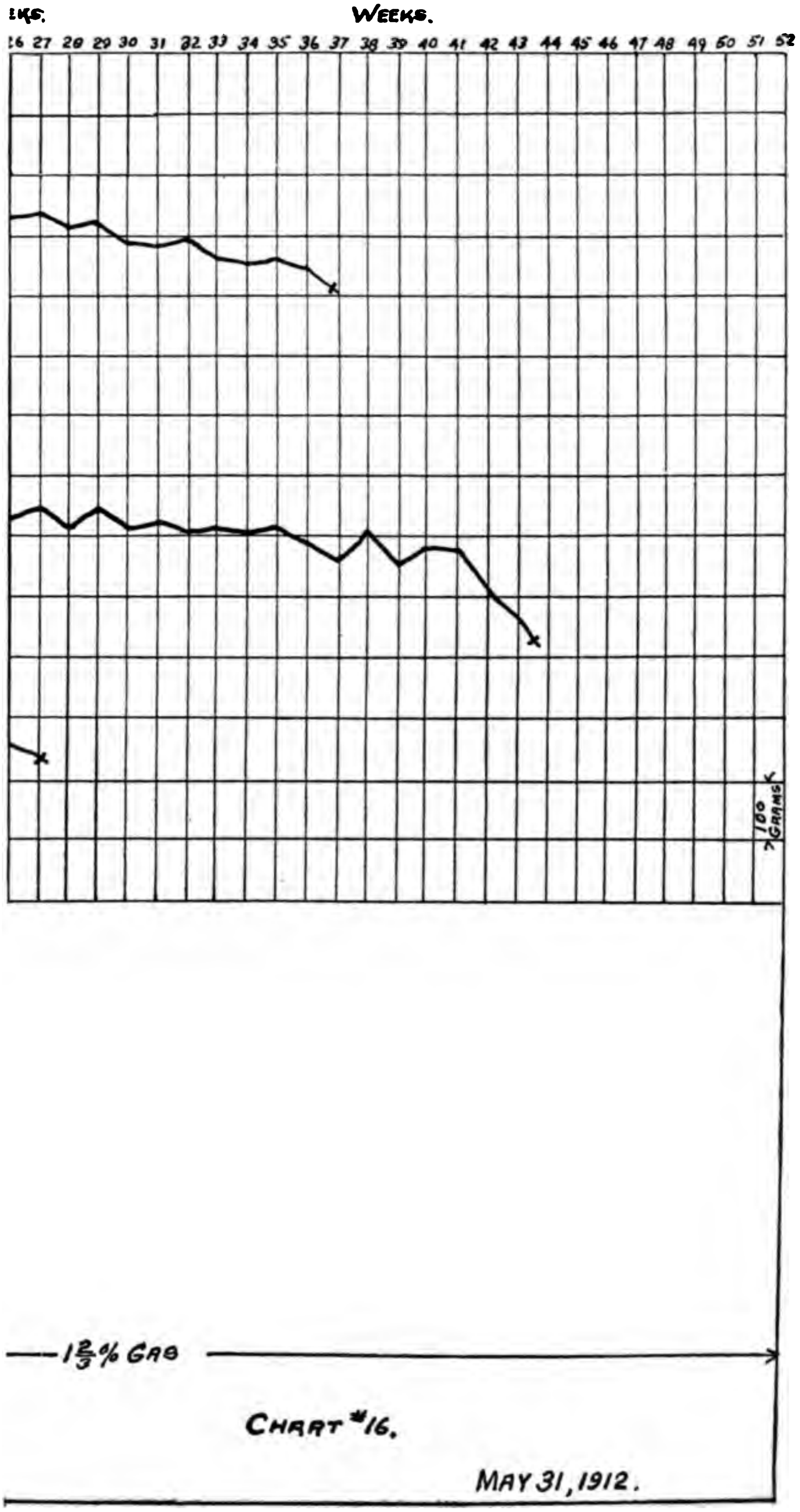
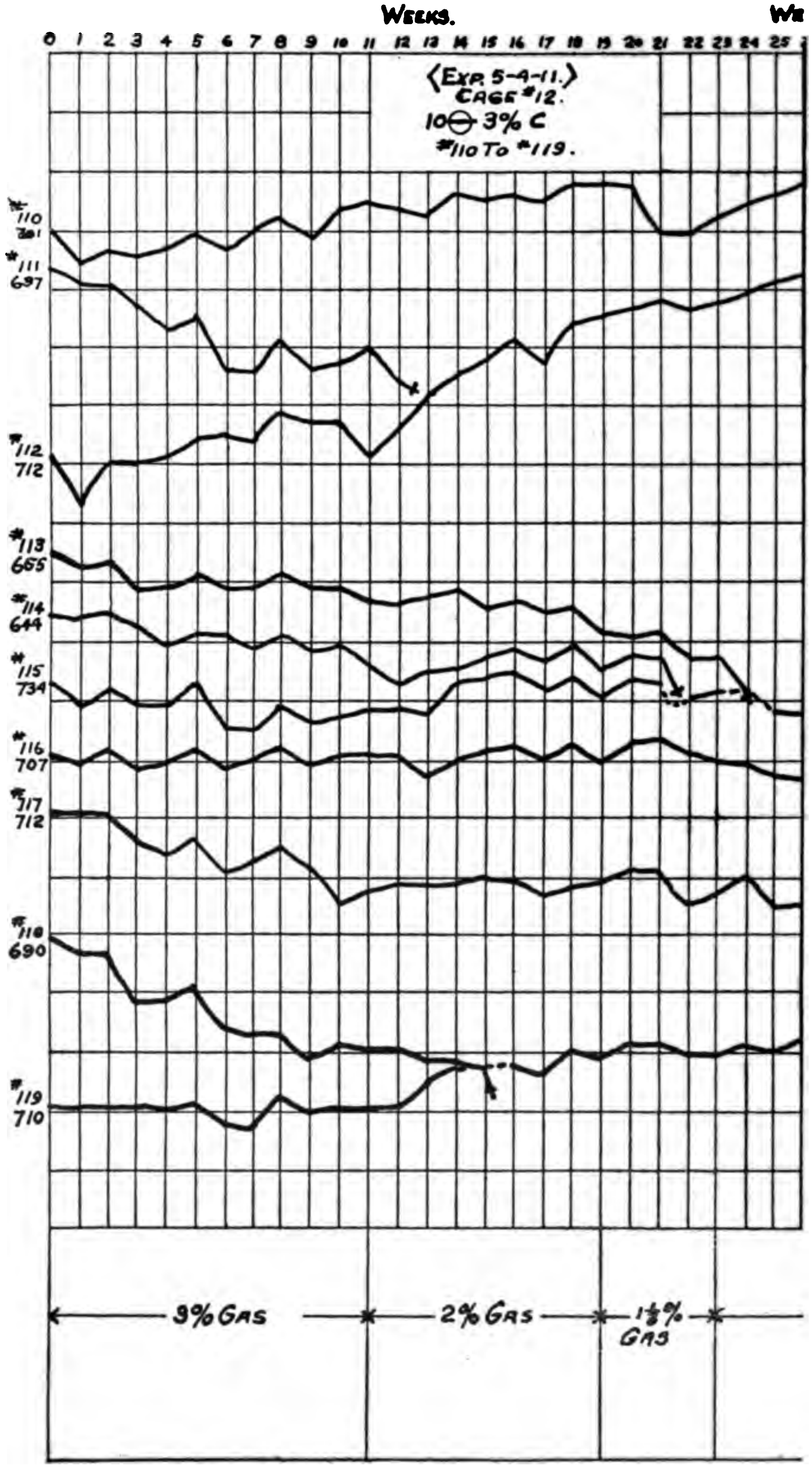


CHART #16.

MAY 31, 1912.


WEEKS.
WE
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
⟨EXP. 5-4-11.⟩
CAGE #12.
10 ⊖ 3% C
#110 TO #119.
#110
781
#111
697
#112
712
#113
665
#114
644
#115
734
#116
707
#117
712
#118
690
#119
710
3% GAS
2% GAS
1½%
GAS

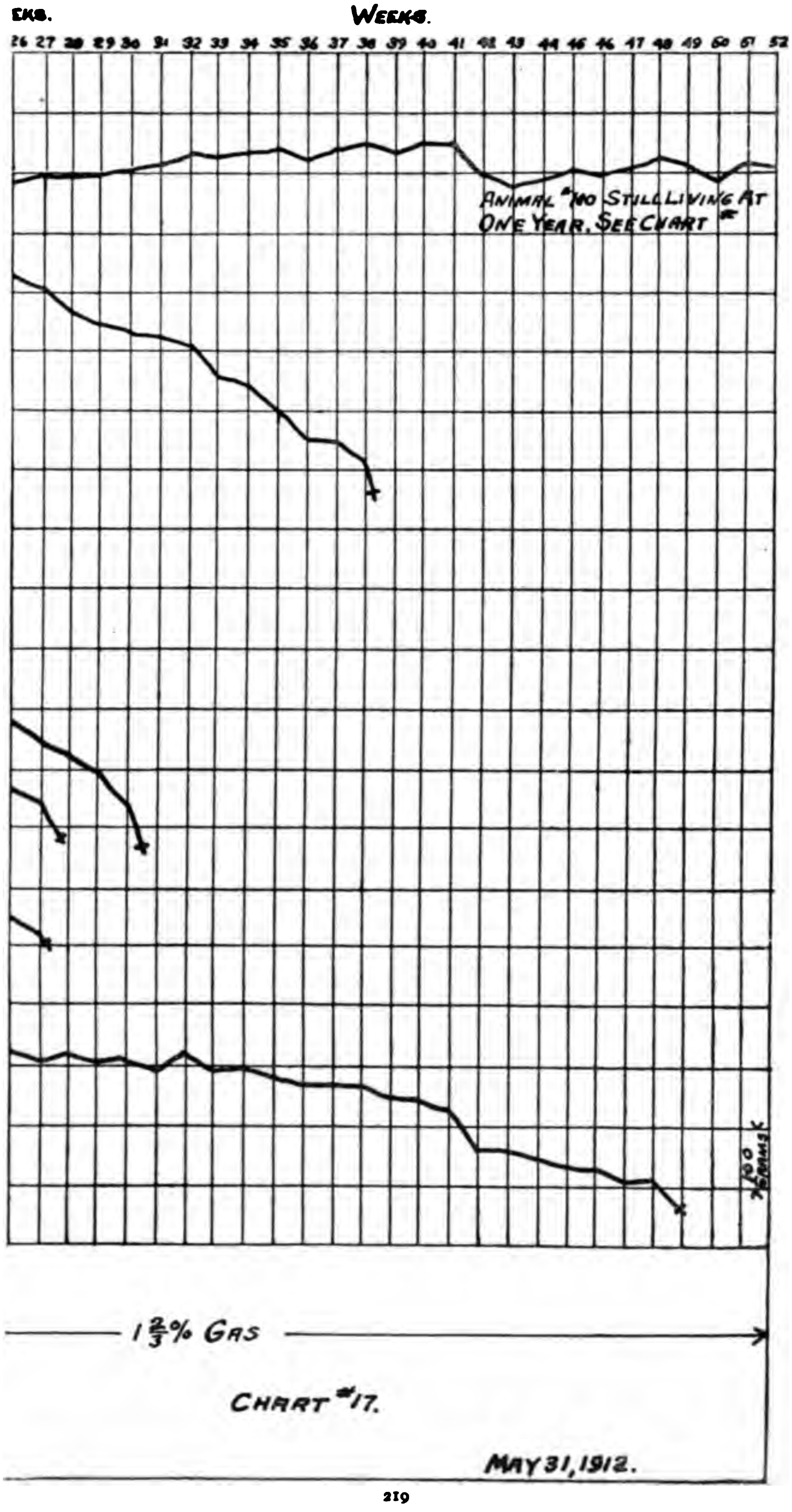


CHART #17.

MAY 31, 1912.

before his inoculation had been of no value to him because he was destroyed by the germs as none of the others were.

Such a view is indeed superficial, for the truth of the matter is that the vital strength of oxidation enabled him to live on with all his organs attacked for a period more than twice as long as any other check animal.

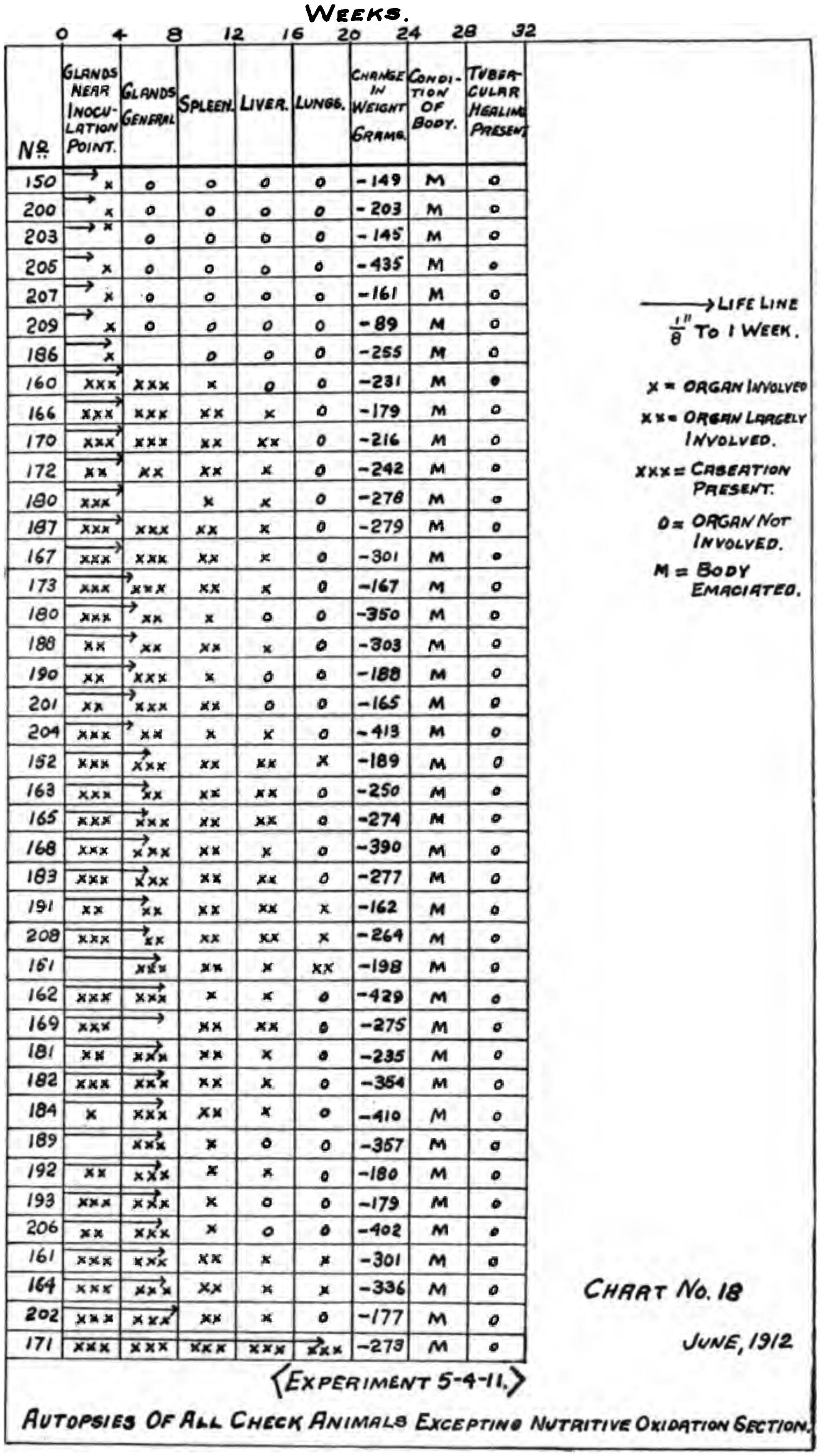
We explain this matter in detail that you may appreciate, in the animals under treatment, how the strength given by the intensified oxygen they inhale enables them to live on through such periods of tubercular devastation as no check animal can stand.

We are now demonstrating *resistance* to tuberculosis, not *cure*, for our work is not done, but in all reason this far-reaching resistance in the most delicate animal known to the attack plainly foreshadows a wonderful hope when applied to the strongest animal, man.

We generally think of tuberculosis as attacking the lungs as the most vulnerable point, but when we look upon our actual record, which has no room for opinions, as it is based solely on facts, we find that of the forty-one animals only seven are diseased in the lungs; of these seven, five are lightly affected, one strongly involved and one with the lungs destroyed as shown by caseation.

The column depicting the changes of weight shows very heavy losses for all of these animals. If we take the fourth animal from the top, No. 205, with his loss of four hundred and thirty-five grams in two weeks, we have the result of an awful assault and perhaps a realization of how powerful oxygen must be to even leave its mark upon such a conflict.

Glance back to the weight curves of the ⌖ animals in two per cent. of the gas after inoculation (page 194) and again see intensified oxygen raise their weight a hundred grams or more in the same period that this one lost more than four hundred grams; can more conclusive evidence be given?



WEEKS.

0 4 8 12 16 20 24 28 32

No.	Glands Near Inoculation Point.	Glands General	Spleen.	Liver.	Lungs.	Change in Weight Grams.	Condition of Body.	Tubercular Healing Present.
150	x	o	o	o	o	-149	M	o
200	x	o	o	o	o	-203	M	o
203	x	o	o	o	o	-145	M	o
205	x	o	o	o	o	-435	M	o
207	x	o	o	o	o	-161	M	o
209	x	o	o	o	o	-89	M	o
186	x		o	o	o	-255	M	o
160	xxx	xxx	x	o	o	-231	M	o
166	xxx	xxx	xx	x	o	-179	M	o
170	xxx	xxx	xx	xx	o	-216	M	o
172	xx	xx	xx	x	o	-242	M	o
180	xxx		x	x	o	-278	M	o
187	xxx	xxx	xx	x	o	-279	M	o
167	xxx	xxx	xx	x	o	-301	M	o
173	xxx	xxx	xx	x	o	-167	M	o
180	xxx	xx	x	o	o	-350	M	o
188	xx	xx	xx	x	o	-303	M	o
190	xx	xxx	x	o	o	-188	M	o
201	xx	xxx	xx	o	o	-165	M	o
204	xxx	xx	x	x	o	-413	M	o
152	xxx	xxx	xx	xx	x	-189	M	o
163	xxx	xx	xx	xx	o	-250	M	o
165	xxx	xxx	xx	xx	o	-274	M	o
168	xxx	xxx	xx	x	o	-390	M	o
183	xxx	xxx	xx	xx	o	-277	M	o
191	xx	xx	xx	xx	x	-162	M	o
208	xxx	xx	xx	xx	x	-264	M	o
161		xxx	xx	x	xx	-198	M	o
162	xxx	xxx	x	x	o	-429	M	o
169	xxx		xx	xx	o	-275	M	o
181	xx	xxx	xx	x	o	-235	M	o
182	xxx	xxx	xx	x	o	-354	M	o
184	x	xxx	xx	x	o	-410	M	o
189		xxx	x	o	o	-357	M	o
192	xx	xxx	x	x	o	-180	M	o
193	xxx	xxx	x	o	o	-179	M	o
206	xx	xxx	x	o	o	-402	M	o
161	xxx	xxx	xx	x	x	-301	M	o
164	xxx	xxx	xx	x	x	-336	M	o
202	xxx	xxx	xx	x	o	-177	M	o
171	xxx	xxx	xxx	xxx	xxx	-273	M	o

→ LIFE LINE $\frac{1''}{8}$ TO 1 WEEK.

x = ORGAN INVOLVED

xx = ORGAN LARGELY INVOLVED.

xxx = CASEATION PRESENT.

O = ORGAN NOT INVOLVED.

M = BODY EMACIATED.

CHART NO. 18

JUNE, 1912

⟨EXPERIMENT 5-4-11.⟩

AUTOPSIES OF ALL CHECK ANIMALS EXCEPTING NUTRITIVE OXIDATION SECTION.

Turning from the autopsies of the check animals, we will take up the ones of those placed under the treatment, starting with Chart No. 19, page 223.

We see at once that as the lives stretch out the tubercular destruction increases, as the germs have had more time in which to do their work. We find, of course, no animals that died within two weeks; or for that matter, within two months, the first death taking place in eleven weeks. Note that the loss of weight is less and that there are several cases of increased weight.

At the end of the record are certain notably good animals; we have marked them to show whether they were O plus or O minus. There are nine of these specially notable cases and seven of the nine are the ⊕.

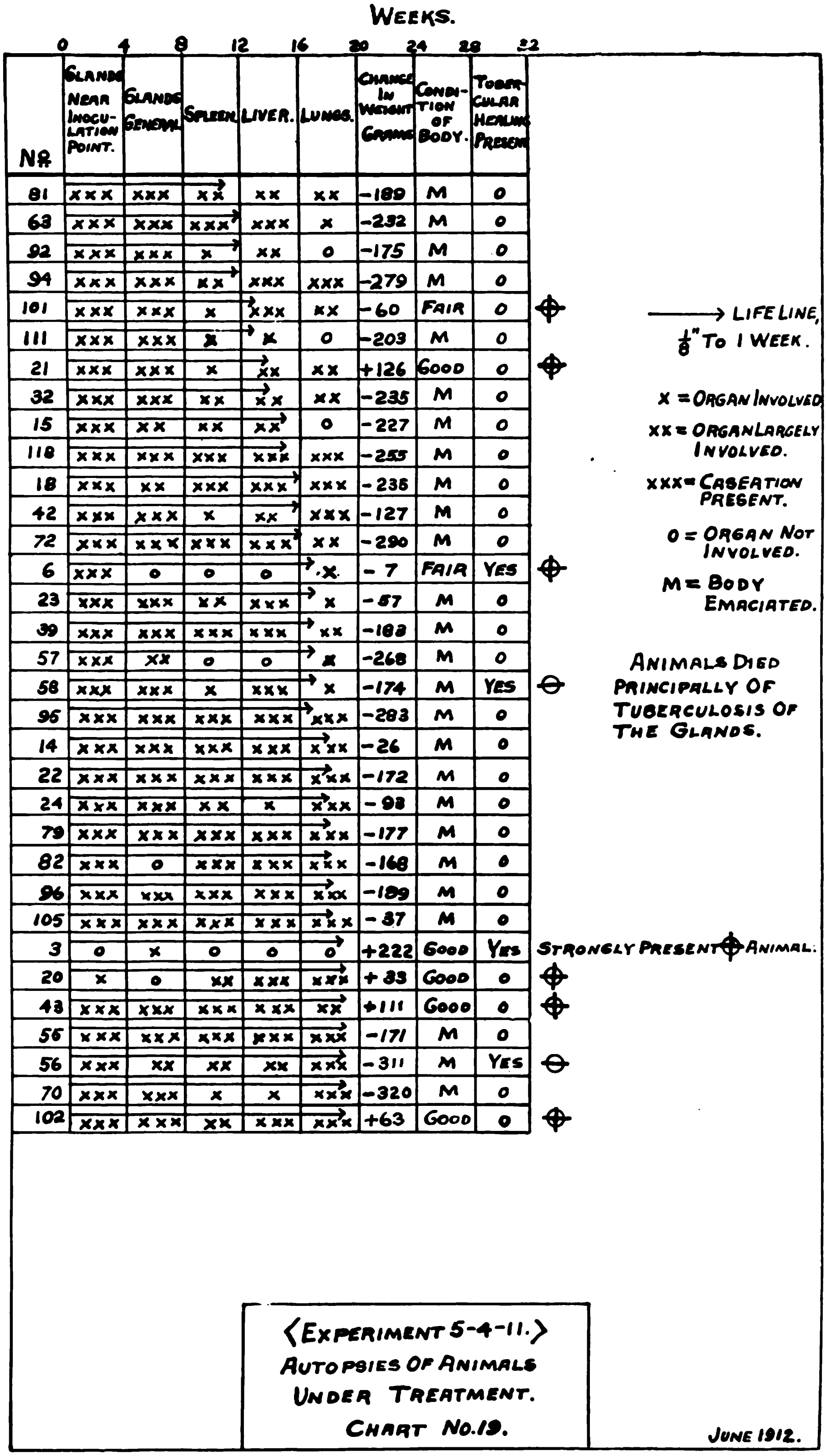
Take the case of animal No. 3, the seventh from the bottom; surely this is something more than resistance. The animal weighed over two hundred grams more than when inoculated, tubercular healing was strongly present and the only evidence of the disease left was a very light involvement of his glands.

Note the other cases of tubercular healing for they mean much, *for of all the hundreds of animals we have inoculated, we have never found a single case of tubercular healing in a check animal.*

Charts No. 20 and No. 21, pages 224 and 225, take us through all the rest of the animals placed under the treatment and show their lives stretching out in strong contrast to the long-since-dead check animals until we reach the statement that there are special drawings and reports on *the animals living more than a year, and notice in passing that all the animals on the last drawing,* Chart No. 21, lived more than six months.

On folding chart facing page 226 we place the drawing Experiment 5-4-11—Animals Living More Than One Year.

This drawing is doubly important, as it not only depicts the his-



No.	Glands Near Inoculation Point.	Glands General.	Spleen.	Liver.	Lungs.	Change in Weight Grams.	Condition of Body.	Tubercular Healing Present.	
81	xxx	xxx	xx	xx	xx	-189	M	0	
63	xxx	xxx	xxx	xxx	x	-232	M	0	
92	xxx	xxx	x	xx	0	-175	M	0	
94	xxx	xxx	xx	xxx	xxx	-279	M	0	
101	xxx	xxx	x	xxx	xx	-60	Fair	0	⊕
111	xxx	xxx	x	x	0	-203	M	0	
21	xxx	xxx	x	xx	xx	+126	Good	0	⊕
32	xxx	xxx	xx	xx	xx	-235	M	0	
15	xxx	xx	xx	xx	0	-227	M	0	
118	xxx	xxx	xxx	xxx	xxx	-255	M	0	
18	xxx	xx	xxx	xxx	xxx	-236	M	0	
42	xxx	xxx	x	xx	xxx	-127	M	0	
72	xxx	xxx	xxx	xxx	xx	-290	M	0	
6	xxx	0	0	0	x	- 7	Fair	Yes	⊕
23	xxx	xxx	xx	xxx	x	-57	M	0	
39	xxx	xxx	xxx	xxx	xx	-183	M	0	
57	xxx	xx	0	0	x	-268	M	0	
58	xxx	xxx	x	xxx	x	-174	M	Yes	⊖
95	xxx	xxx	xxx	xxx	xxx	-283	M	0	
14	xxx	xxx	xxx	xxx	xxx	-26	M	0	
22	xxx	xxx	xxx	xxx	xxx	-172	M	0	
24	xxx	xxx	xx	x	xxx	- 93	M	0	
79	xxx	xxx	xxx	xxx	xxx	-177	M	0	
82	xxx	0	xxx	xxx	xxx	-168	M	0	
96	xxx	xxx	xxx	xxx	xxx	-189	M	0	
105	xxx	xxx	xxx	xxx	xxx	- 37	M	0	
3	0	x	0	0	0	+222	Good	Yes	Strongly Present ⊕ Animal.
20	x	0	xx	xxx	xxx	+ 33	Good	0	⊕
43	xxx	xxx	xxx	xxx	xx	+111	Good	0	⊕
55	xxx	xxx	xxx	xxx	xxx	-171	M	0	
56	xxx	xx	xx	xx	xxx	-311	M	Yes	⊖
70	xxx	xxx	x	x	xxx	-320	M	0	
102	xxx	xxx	xx	xxx	xxx	+63	Good	0	⊕

⟶ Life Line, $\frac{1}{8}$" to 1 Week.

x = Organ Involved.

xx = Organ Largely Involved.

xxx = Caseation Present.

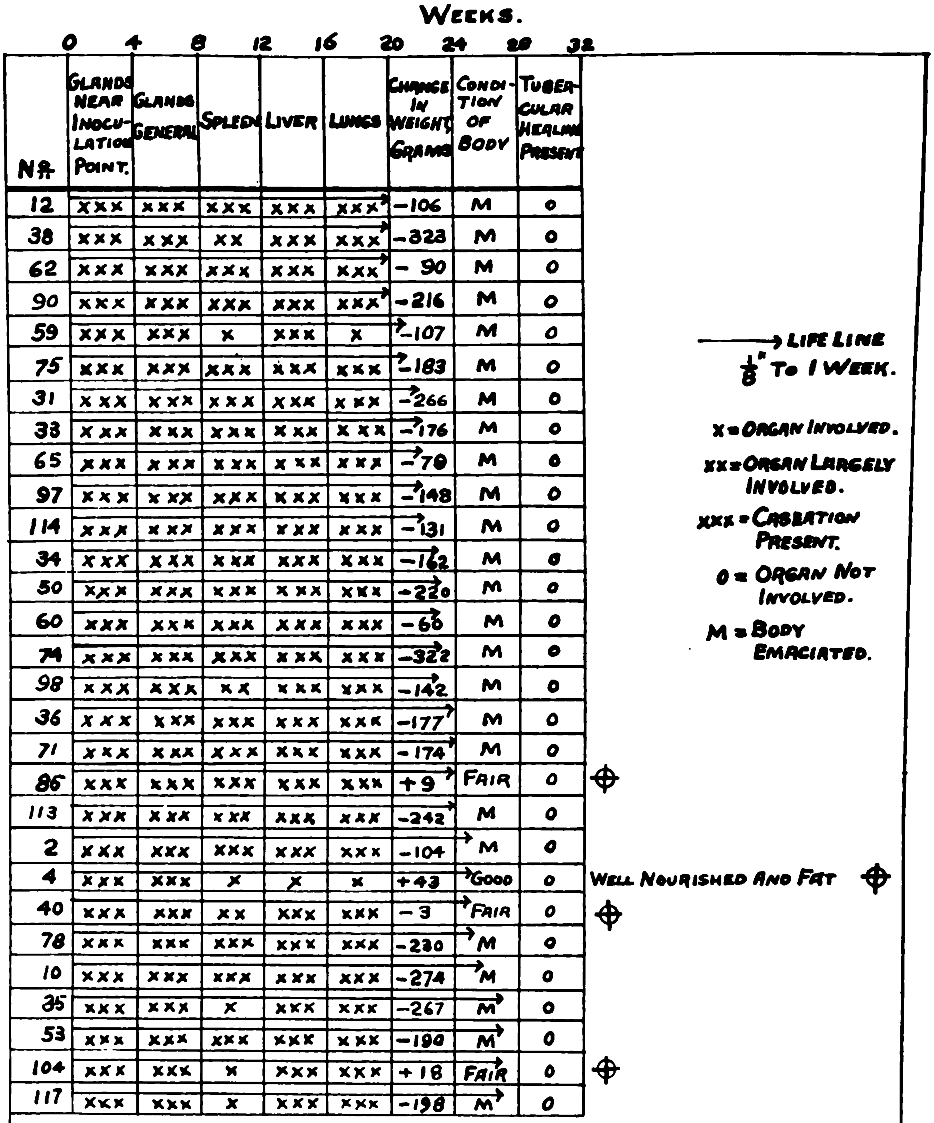
0 = Organ Not Involved.

M = Body Emaciated.

Animals Died Principally of Tuberculosis of the Glands.

⟨Experiment 5-4-11.⟩
Autopsies of Animals
Under Treatment.
Chart No. 19.

June 1912.



Nº	Glands near Inoculation Point.	Glands General	Spleen	Liver	Lungs	Change in Weight Grams	Condition of Body	Tubercular Healing Present	
12	xxx	xxx	xxx	xxx	xxx	-106	M	0	
38	xxx	xxx	xx	xxx	xxx	-323	M	0	
62	xxx	xxx	xxx	xxx	xxx	- 90	M	0	
90	xxx	xxx	xxx	xxx	xxx	-216	M	0	
59	xxx	xxx	x	xxx	x	-107	M	0	
75	xxx	xxx	xxx	xxx	xxx	-183	M	0	
31	xxx	xxx	xxx	xxx	xxx	-266	M	0	
33	xxx	xxx	xxx	xxx	xxx	-176	M	0	
65	xxx	xxx	xxx	xxx	xxx	-79	M	0	
97	xxx	xxx	xxx	xxx	xxx	-148	M	0	
114	xxx	xxx	xxx	xxx	xxx	-131	M	0	
34	xxx	xxx	xxx	xxx	xxx	-162	M	0	
50	xxx	xxx	xxx	xxx	xxx	-220	M	0	
60	xxx	xxx	xxx	xxx	xxx	-66	M	0	
74	xxx	xxx	xxx	xxx	xxx	-322	M	0	
98	xxx	xxx	xx	xxx	xxx	-142	M	0	
36	xxx	xxx	xxx	xxx	xxx	-177	M	0	
71	xxx	xxx	xxx	xxx	xxx	- 174	M	0	
86	xxx	xxx	xxx	xxx	xxx	+9	Fair	0	⊕
113	xxx	xxx	xxx	xxx	xxx	-242	M	0	
2	xxx	xxx	xxx	xxx	xxx	-104	M	0	
4	xxx	xxx	x	x	x	+43	Good	0	Well Nourished And Fat ⊕
40	xxx	xxx	xx	xxx	xxx	- 3	Fair	0	⊕
78	xxx	xxx	xxx	xxx	xxx	-230	M	0	
10	xxx	xxx	xxx	xxx	xxx	-274	M	0	
35	xxx	xxx	x	xxx	xxx	-267	M	0	
53	xxx	xxx	xxx	xxx	xxx	-190	M	0	
104	xxx	xxx	x	xxx	xxx	+ 18	Fair	0	⊕
117	xxx	xxx	x	xxx	xxx	-198	M	0	

→ Life Line
1/8" To 1 Week.

x = Organ Involved.

xx = Organ Largely Involved.

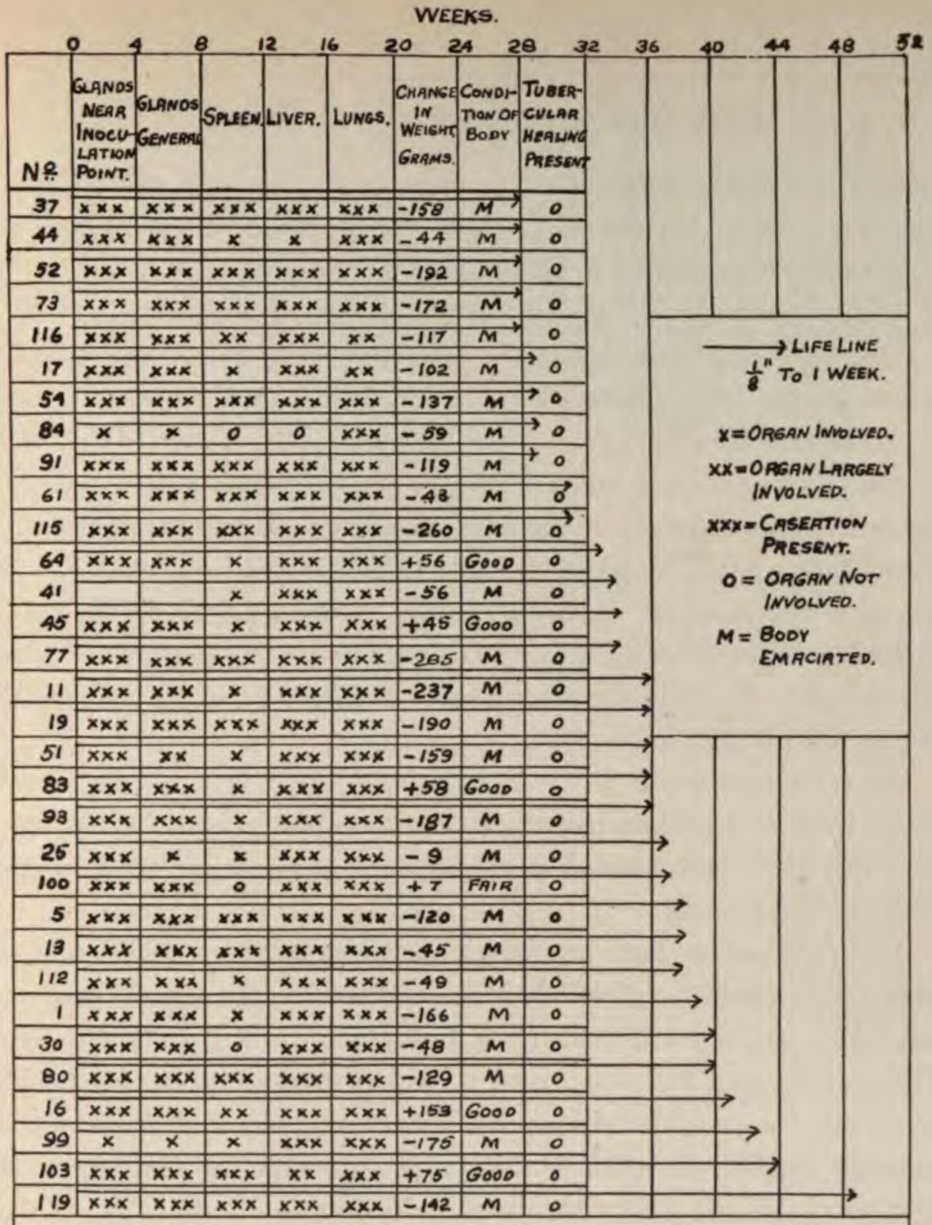
xxx = Caseation Present.

0 = Organ Not Involved.

M = Body Emaciated.

⟨Experiment 5-4-11.⟩
Autopsies of Animals
Under Treatment.
Chart No. 20

June, 1912.



Nº	Glands Near Inoculation Point.	Glands General	Spleen	Liver.	Lungs.	Change in Weight Grams.	Condition of Body	Tubercular Healing Present
37	xxx	xxx	xxx	xxx	xxx	-158	M	o
44	xxx	xxx	x	x	xxx	-44	M	o
52	xxx	xxx	xxx	xxx	xxx	-192	M	o
73	xxx	xxx	xxx	xxx	xxx	-172	M	o
116	xxx	xxx	xx	xxx	xx	-117	M	o
17	xxx	xxx	x	xxx	xx	-102	M	o
54	xxx	xxx	xxx	xxx	xxx	-137	M	o
84	x	x	o	o	xxx	-59	M	o
91	xxx	xxx	xxx	xxx	xxx	-119	M	o
61	xxx	xxx	xxx	xxx	xxx	-48	M	o
115	xxx	xxx	xxx	xxx	xxx	-260	M	o
64	xxx	xxx	x	xxx	xxx	+56	Good	o
41			x	xxx	xxx	-56	M	o
45	xxx	xxx	x	xxx	xxx	+45	Gooo	o
77	xxx	xxx	xxx	xxx	xxx	-285	M	o
11	xxx	xxx	x	xxx	xxx	-237	M	o
19	xxx	xxx	xxx	xxx	xxx	-190	M	o
51	xxx	xx	x	xxx	xxx	-159	M	o
83	xxx	xxx	x	xxx	xxx	+58	Good	o
93	xxx	xxx	x	xxx	xxx	-187	M	o
26	xxx	x	x	xxx	xxx	-9	M	o
100	xxx	xxx	o	xxx	xxx	+7	Fair	o
5	xxx	xxx	xxx	xxx	xxx	-120	M	o
13	xxx	xxx	xxx	xxx	xxx	-45	M	o
112	xxx	xxx	x	xxx	xxx	-49	M	o
1	xxx	xxx	x	xxx	xxx	-166	M	o
30	xxx	xxx	o	xxx	xxx	-48	M	o
80	xxx	xxx	xxx	xxx	xxx	-129	M	o
16	xxx	xxx	xx	xxx	xxx	+153	Good	o
99	x	x	x	xxx	xxx	-175	M	o
103	xxx	xxx	xxx	xx	xxx	+75	Good	o
119	xxx	xxx	xxx	xxx	xxx	-142	M	o

→ Life Line
$\frac{1}{8}$" To 1 Week.

x = Organ Involved.
xx = Organ Largely Involved.
xxx = Caseation Present.
o = Organ Not Involved.
M = Body Emaciated.

SEE SPECIAL DRAWINGS AND REPORTS ON ANIMALS LIVING OVER ONE YEAR.

NUTRITIVE OXIDATION SECTION OF EXPERIMENT IN SEPARATE REPORT.

⟨EXPERIMENT 5-4-11.⟩
AUTOPSIES OF ANIMALS
UNDER TREATMENT.
CHART No. 21.

JUNE, 1912.

tory of our three longest-lived animals, but also shows the different changes made in our efforts to solve the problem that prevented us from raising the voltage to its previous maximum.

We will consider the weight curves of the animals first.

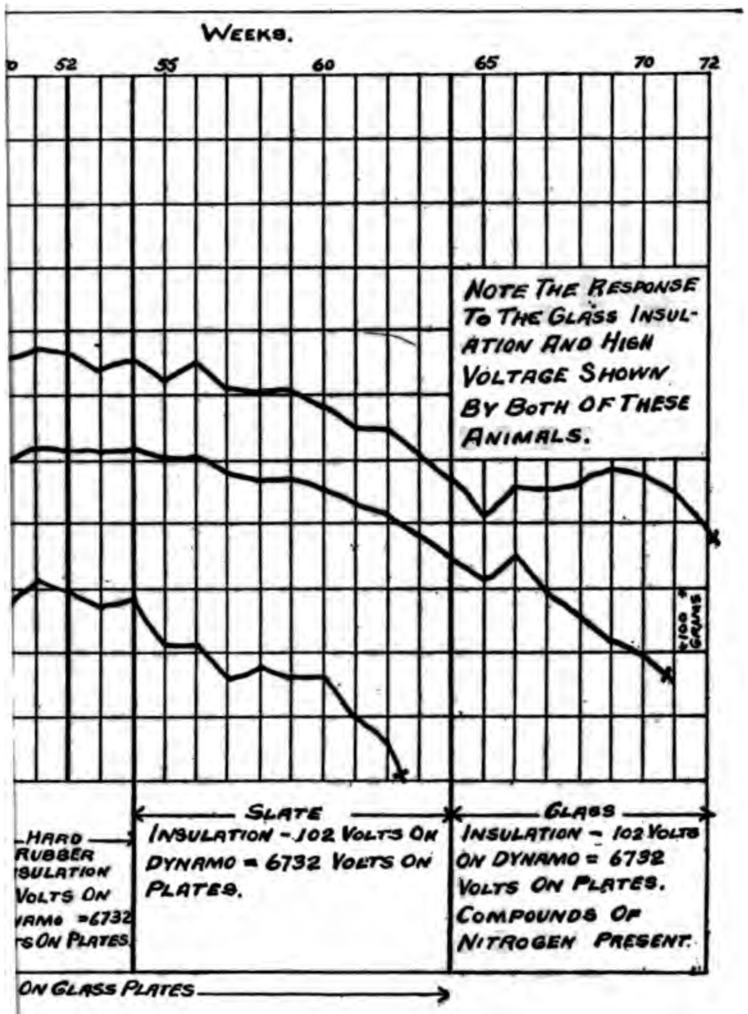
Animal No. 76, ⊖, a natural animal weighing six hundred and fifteen grams when inoculated. After inoculation he was carried in three per cent. of the gas for eleven weeks, the balance of the time he was in two per cent. of gas. Six weeks after inoculation, he commenced to gain strongly. The apex of his curve is reached at twenty-seven weeks, when he weighed eight hundred and forty grams. At this time the steadily increasing hordes of the tubercle bacilli commenced to overpower him and his weight curve gradually fell, but the strength of oxidation maintained him for almost a year after he reached his greatest weight.

At forty-one weeks after inoculation the disease struck him a heavy blow and he lost more than one hundred grams, but he rose from this blow and continued his hopeless struggle for twenty-nine weeks before he died.

It would seem that no better demonstration of resistance to tuberculosis could be given than that shown by this animal and his two mates, and we will leave these interesting records to be followed with reason, step by step, from their inoculation to their long-deferred fate; so long deferred as to cause us to say that the animals probably lived their ordinary life time, for these animals were at least two years old at the time of their death.

On this drawing is the record of the steps taken which eventually solved the insulation phase of our problem.

For forty-nine weeks after the inoculation, we failed in every effort to raise the voltage to the point we wished to attain, but at this time we replaced the glass with sheets of hard rubber and maintained our full voltage for five weeks.

WEEKS.
0
52
55
60
65
70
72
NOTE THE RESPONSE TO THE GLASS INSULATION AND HIGH VOLTAGE SHOWN BY BOTH OF THESE ANIMALS.
100 GRAMS
HARD RUBBER
SULATION
VOLTS ON
YAMO =6732
TS ON PLATES.
SLATE
INSULATION - 102 VOLTS ON DYNAMO = 6732 VOLTS ON PLATES.
GLASS
INSULATION = 102 VOLTS ON DYNAMO = 6732 VOLTS ON PLATES. COMPOUNDS OF NITROGEN PRESENT.
ON GLASS PLATES

The gas we made did not impress us as right, for while giving all chemical tests, it seemed to lack something. No compounds of nitrogen were found and the gas seemed to have lost its "snappy" odor. At the end of five weeks the effort ended in failure and a fire.

We then insulated with carefully picked sheets of ordinary roofing slate, as they were hard and vitreous and could not burn.

This effort lasted for ten weeks, but still the gas did not impress us favorably and again all evidences of nitrogen compounds were lacking.

At the end of ten weeks the slate failed and our problem was solved, as the sheets of hard slate had all changed to a soft chalky condition and it at once became apparent that our trouble had been caused by the demonstrated fact that no material could *permanently* withstand the strain we had placed upon it.

The hard rubber had burned up in five weeks, the slate had become soft in ten, the glass plates did not show any sign excepting the fact that they broke into pieces, one at a time.

Our mistake had been that we would replace the broken plate and leave thirty-odd old ones in the cell. We rebuilt all our cells with new glass plates and when the strain commenced to show itself by frequent breakdowns we replaced all plates with new ones and have since had no serious trouble.

Compounds of nitrogen came back with the use of the new glass plates and the full voltage.

Turning once more to the curves of the animals, we see their very interesting response, as shown by a positive increase in weight in both at the sixty-fifth week.

Of course it was too late to change the result, but we were again in control of at least one vital factor and could proceed with our problem.

While this experiment does not, in our judgment, attain the very high plane of the January and the August Experiments, yet it far outreaches the November Experiment and it also carries, in at least some of its animals, each and every characteristic of the first two experiments, except the general character of the weight curves; even tubercular healing is repeatedly found. The great distinction is that the curves just after inoculation are of a different character from either the January or the August ones. In the two first experiments the animals lost weight heavily in the period just after inoculation, say four to five weeks, while the previously oxidized ones in this experiment rise strongly as if the inoculation had been stimulating to them; they fairly leap forward.

Embraced in these distinctions is what we call the character of a weight curve and the writer believes it may count for far more than the mere weight changes, for it may well be a distinct and vital mark of the process.

VIRULENCE, NOT QUANTITY, DETERMINES THE RESULT

The question of virulence has been running through these experiments and we have now reached the point where it becomes necessary for us to face its significance.

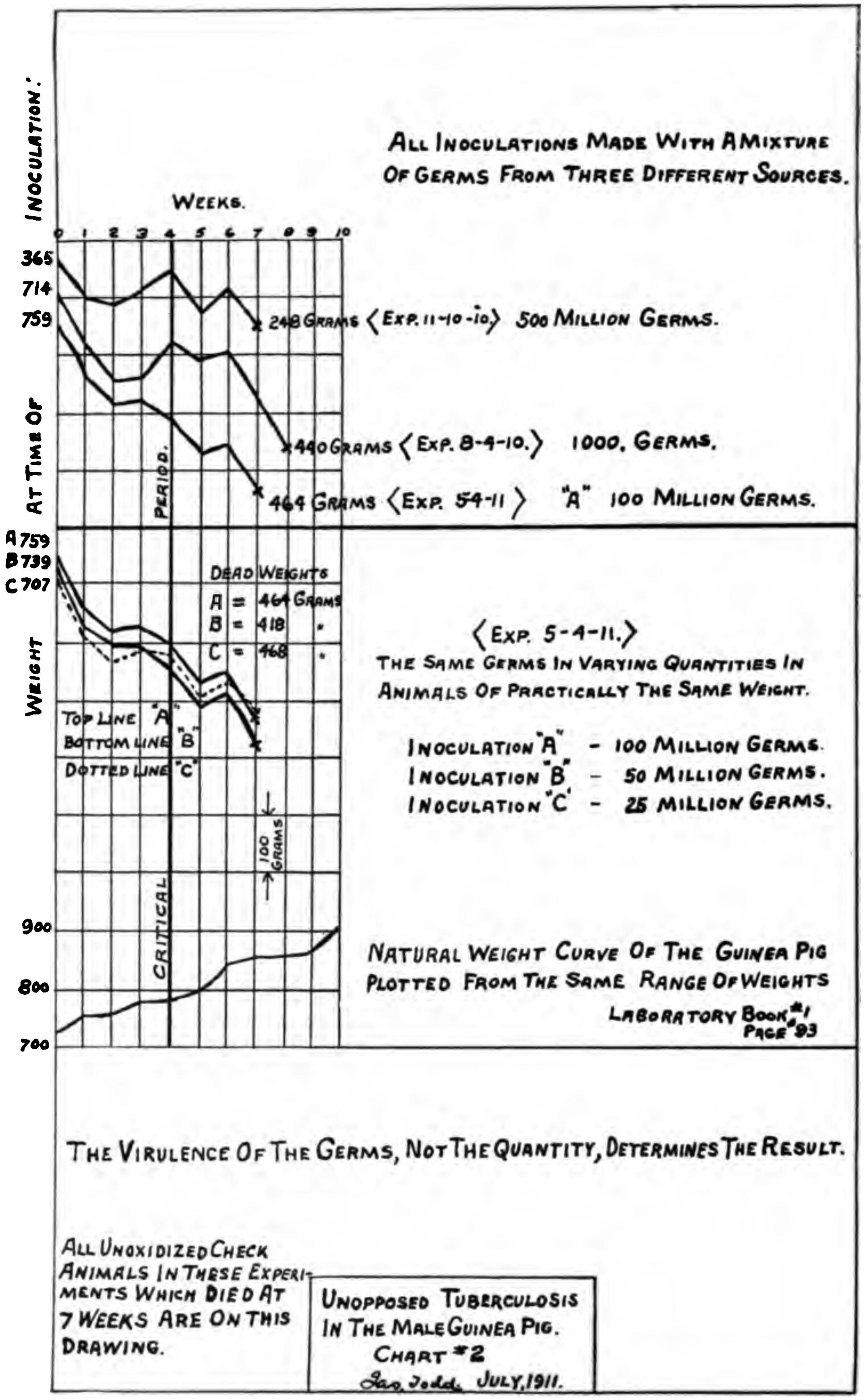
It is to a certain extent an outlying question, difficult to properly place among the experiments, yet necessary to an understanding of our work; we have concluded to place it here just before commencing to gather our results together.

On page 230 we place CHART NO. 2—UNOPPOSED TUBERCULOSIS IN THE MALE GUINEA PIG. We there state the VIRULENCE OF THE GERMS, NOT THE QUANTITY, DETERMINES THE RESULT. A close examination of this drawing will show the clear proof of this proposition.

At first thought it seems unreasonable to say that the number of the tubercle bacilli which may attack us has little or nothing to do with the result, but with the fact demonstrated we are forced to acknowledge its applicability.

Still quantity must have something to do with the case. Common sense would tell us that one thousand of the same germs ought to attack at least a little stronger than one hundred could, and this is so, but to such a limited extent as to actually strengthen, by comparison, the proposition we have before us.

In the inoculation of the animals we endeavored to use germs from three different human sources and by means of quantitative weights which were based on actual counts we obtained a definite and uniform inoculation, using a letter to represent each inoculation.



All Inoculations Made With A Mixture Of Germs From Three Different Sources.

248 Grams ⟨Exp. 11-10-10⟩ 500 Million Germs.

440 Grams ⟨Exp. 8-4-10.⟩ 1000, Germs.

464 Grams ⟨Exp. 54-11⟩ "A" 100 Million Germs.

Dead Weights			
A	=	464	Grams
B	=	418	"
C	=	468	"

⟨Exp. 5-4-11.⟩

The Same Germs In Varying Quantities In Animals Of Practically The Same Weight.

Inoculation "A" - 100 Million Germs.
Inoculation "B" - 50 Million Germs.
Inoculation "C" - 25 Million Germs.

Natural Weight Curve Of The Guinea Pig Plotted From The Same Range Of Weights

Laboratory Book #1
Page #93

The Virulence Of The Germs, Not The Quantity, Determines The Result.

All Unoxidized Check Animals In These Experiments Which Died At 7 Weeks Are On This Drawing.

Unopposed Tuberculosis
In The Male Guinea Pig.
Chart #2
Jas. Todd. July, 1911.

"*A*" equals one five hundredth of a gram of the "pure" culture, equal to one hundred million germs. Each succeeding letter represents one half of the quantity represented by the previous letter; "*B*," therefore, equals fifty million germs, "*C*" twenty-five million, and so on.

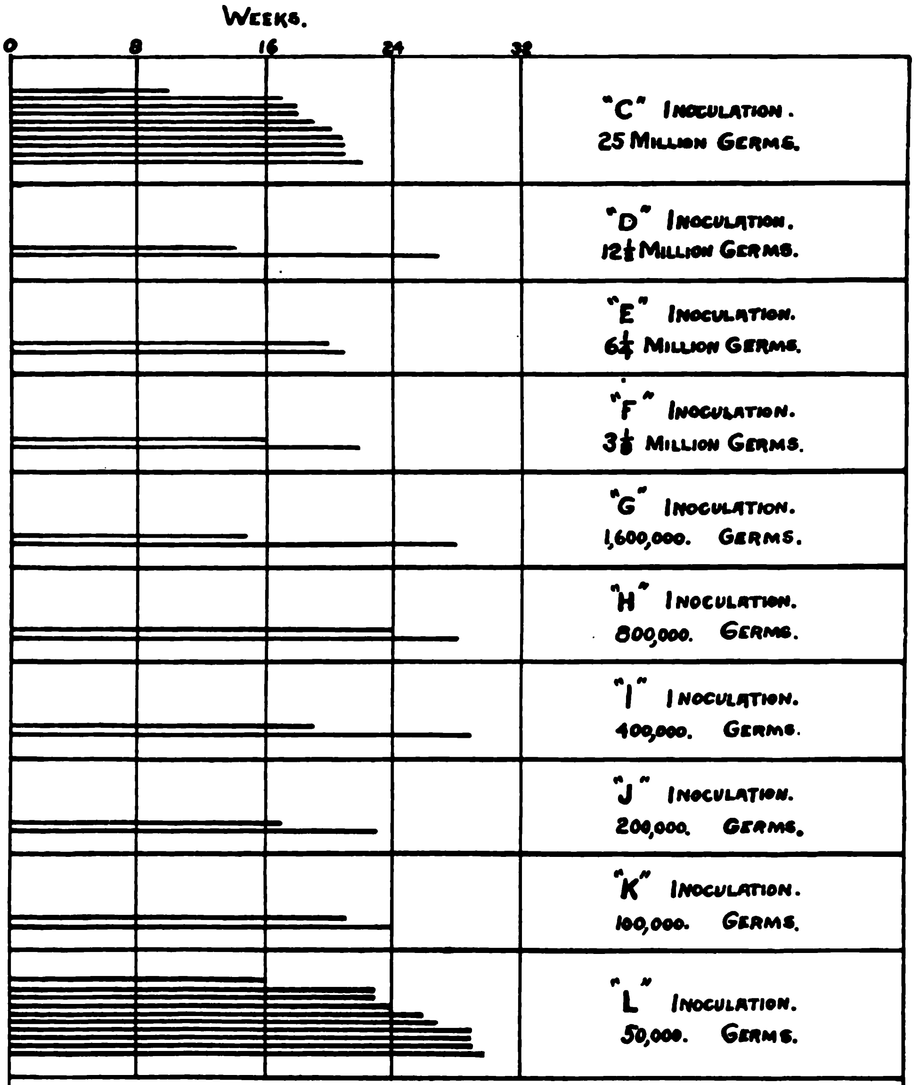
To return to the drawing, on the upper section of which are the weight curves of the check animals from the August, the November and the First May experiments, we find in EXPERIMENT 11–10–10 we have five hundred million germs; in the August Experiment (EXPERIMENT 8–4–10) but one thousand germs; while in the May Experiment (EXPERIMENT 5–4–11) there are one hundred million.

The curves show no material difference, and so support the statement that virulence controls. This proposition is still more conclusively proved by the divisions of the First May Experiment (EXPERIMENT 5–4–11) where three different inoculations, A, B and C, were used, representing one hundred million, fifty million and twenty-five million germs. In this experiment the same germs, out of the same bottle, were used on the same day, on animals of practically the same weights.

These curves (on the lower portion of the drawing) actually intermingle; there is no difference.

Here comes to view the all-important fact, viz.: *virulence, not quantity, controls.* This being the case we must always design our experiments against the varying factor of the unknown inoculation. The enemy we are fighting is different each time and we know neither the form nor strength he has assumed until long after the experiment has been started.

The curves on this drawing are strong and conclusive proofs on this point, but on the drawing on page 232, UNOPPOSED TUBERCULOSIS IN THE MALE GUINEA PIG—CHART NO. 3, based on the Second May Experiment (EXPERIMENT 5–16–12) we have been able



The Virulence Of The Germs, Not The Quantity, Determines The Result.

The Distinctions Only Emphasize The Fact.

Using All Check Animals From Experiment 5-16-12.

Life Lines $\frac{1}{8}$" = 1 Week.

Unopposed Tuberculosis
In The Male Guinea Pig.
Chart #3.
Jas. Dodd. February, 1913.

to reach out still further into this matter, and by a different demonstration again present the matter clearly and conclusively.

On this drawing it will be noticed that each succeeding inoculation is one-half in number of the same germs as the preceding one; that there are ten animals in the first and last groups, the heaviest and the lightest inoculations, and that the connecting groups are of two animals each. On the drawing the length of life of the animal is represented by a straight line. On the original drawing one-eighth of an inch equals one week.

In studying these groups of animals no material distinction can be found when we take into consideration the fact that twenty-five million germs were placed in the upper group of animals while but fifty thousand were in the lower. The distinctions are so slight that we can pass on, having again established the fact, viz.: virulence, not quantity, controls.

RESISTANCE TO TUBERCULOSIS ESTABLISHED

In order to present the evidence conclusively and tersely, we will draw comparison between all the check animals and all of the animals that have passed through the treatment, using only the length of their lives as a demonstrator. To accomplish this we will use for each animal a straight line one eighth of an inch long for every week the animal lived after being inoculated.

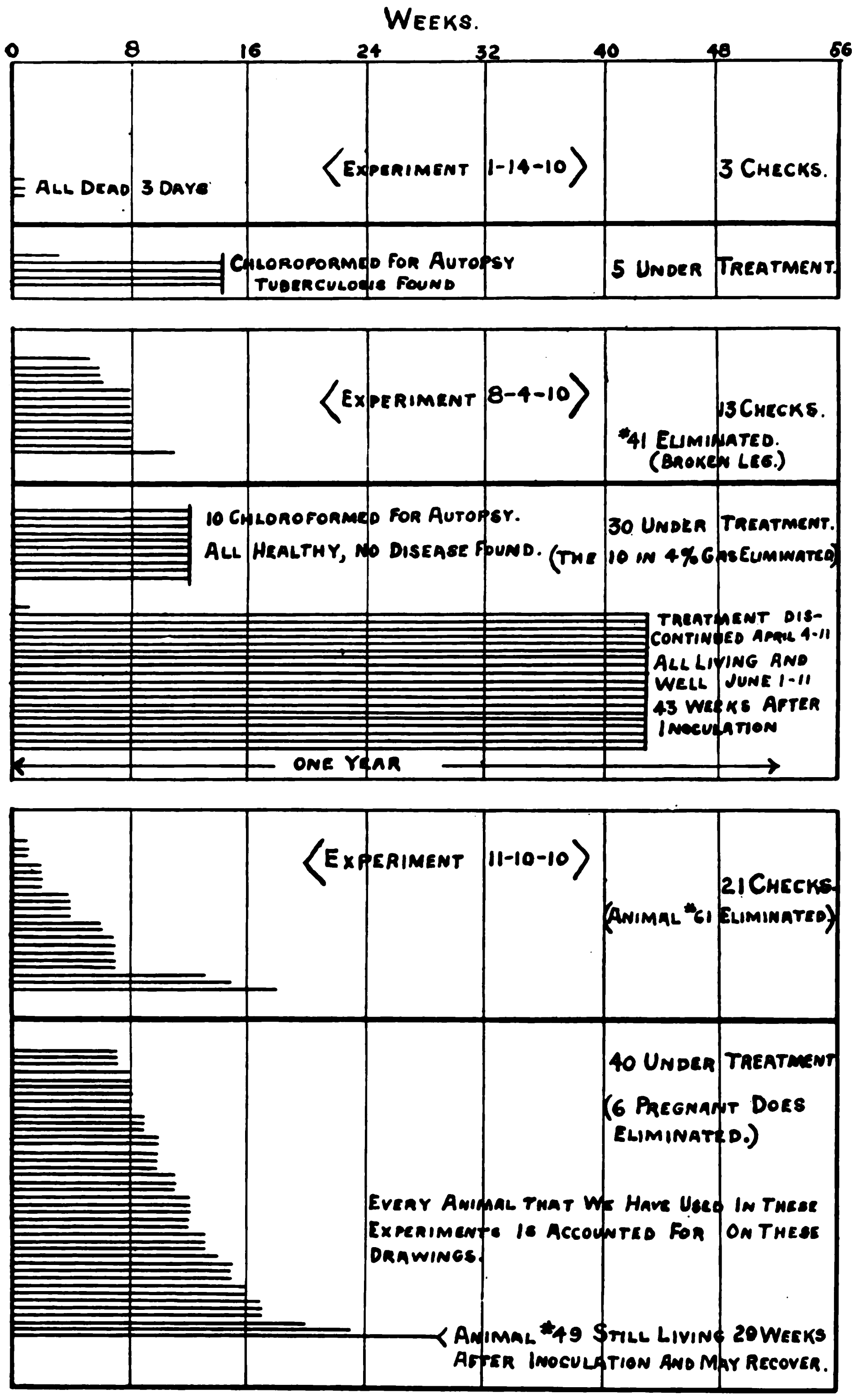
On page 235 we place the drawing CHART DEMONSTRATING RESISTANCE ESTABLISHED.

At the top of the drawing is the January Experiment (EXPERIMENT 1–14–10). The three check animals all died within four days. Of the five placed under the treatment, one is shown to have died in three weeks, while the other four did not die of the disease, but were chloroformed thirteen weeks after inoculation.

It will be noticed that a straight line is drawn perpendicularly at the end of these four life lines; when an animal does not die of the disease we so close the lines and thus indicate the fact, while if it has died from the disease, the life line is left unmarked.

Next we reach the August Experiment (EXPERIMENT 8–4–10). First we show the thirteen check animals, the longest lived being eleven weeks. Below this are the ten animals which had been placed in three per cent. of the gas, all living to be chloroformed at the end of three months. Certain animals are eliminated for reasons stated on the drawing.

Next we come to the twenty animals carried in one and in two per cent. of the gas. One died in about two weeks, which fact is shown by the short life line at the top of the cluster. The drawing



EVERY ANIMAL THAT WE HAVE USED IN THESE EXPERIMENTS IS ACCOUNTED FOR ON THESE DRAWINGS.

CHART DEMONSTRATING RESISTANCE ESTABLISHED.

1/8 INCH LATERALLY EQUALS 1 WEEK.

Jas Todd JUNE 5, 1911.

states that the other nineteen lived for forty-three weeks but the drawing was made in June, 1911, and the animals lived in perfect health until their year was up in August and were then chloroformed.

This brings us to the November Experiment (EXPERIMENT 11-10-10). One is eliminated from the check animals, as it died within twenty-four hours after being inoculated.

Even in this experiment the animals under the treatment live distinctly longer than the check animals, the first death being in seven weeks as compared to one week for the check animals, and the whole culminating in animal No. 49 which lived forty-five weeks after inoculation.

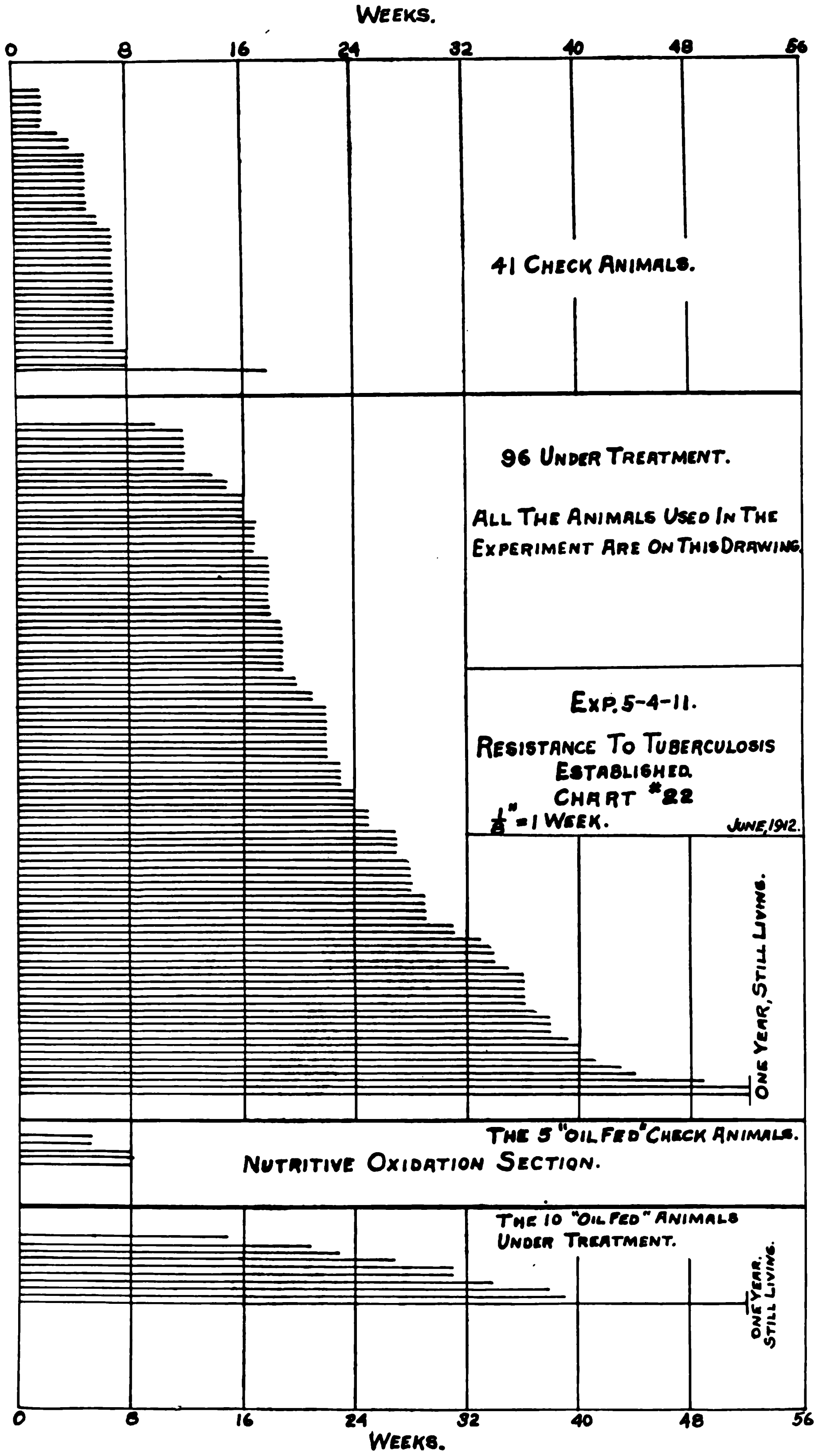
Note the statement on the drawing that every animal that we have used in these experiments is accounted for on the drawing. To use the happy phrase of Lord Mansfield, the case is so clear that it can only be obscured by argument.

Turning from this drawing, we place CHART NO. 22 from the First May Experiment on page 237. We do not intend to argue or explain with such self-evident facts before us as are shown on this drawing. Here are the life lines of one hundred and fifty-two animals; of the forty-six check animals, all but one are dead in eight weeks. *Of one hundred and six animals placed under the treatment, the first one died in ten weeks, the last one lived one year and twenty weeks.*

RESISTANCE TO TUBERCULOSIS ESTABLISHED; WHAT DOES IT MEAN?

It means that man now, after all these centuries of suffering, has at last placed his feet firmly upon that great intermediate stepping stone lying more than midway between the scourge and its removal. It further means that man so placed may only lose his power to throttle the disease by his own neglect.

It is not the writer, to whom the chances of life has brought this task, that speaks, for he is only the advocate of nature and nature's


WEEKS.
0
8
16
24
32
40
48
56
41 CHECK ANIMALS.
96 UNDER TREATMENT.
ALL THE ANIMALS USED IN THE EXPERIMENT ARE ON THIS DRAWING.
EXP. 5-4-11.
RESISTANCE TO TUBERCULOSIS ESTABLISHED.
CHART #22
1/8" = 1 WEEK.
JUNE, 1912.
ONE YEAR, STILL LIVING.
THE 5 "OIL FED" CHECK ANIMALS.
NUTRITIVE OXIDATION SECTION.
THE 10 "OIL FED" ANIMALS UNDER TREATMENT.
ONE YEAR. STILL LIVING.
0
8
16
24
32
40
48
56
WEEKS.

wonderful, dominant element OXYGEN in its changeable forms. It matters little to the world as to who has done this and we well understand the fact, but it matters much to the world if it is lost now that it is first found and so the question that these drawings ask of every intelligent reader is whether this process, with its promise of untold good for humanity, is to be allowed to be lost, for this question is largely in his hands.

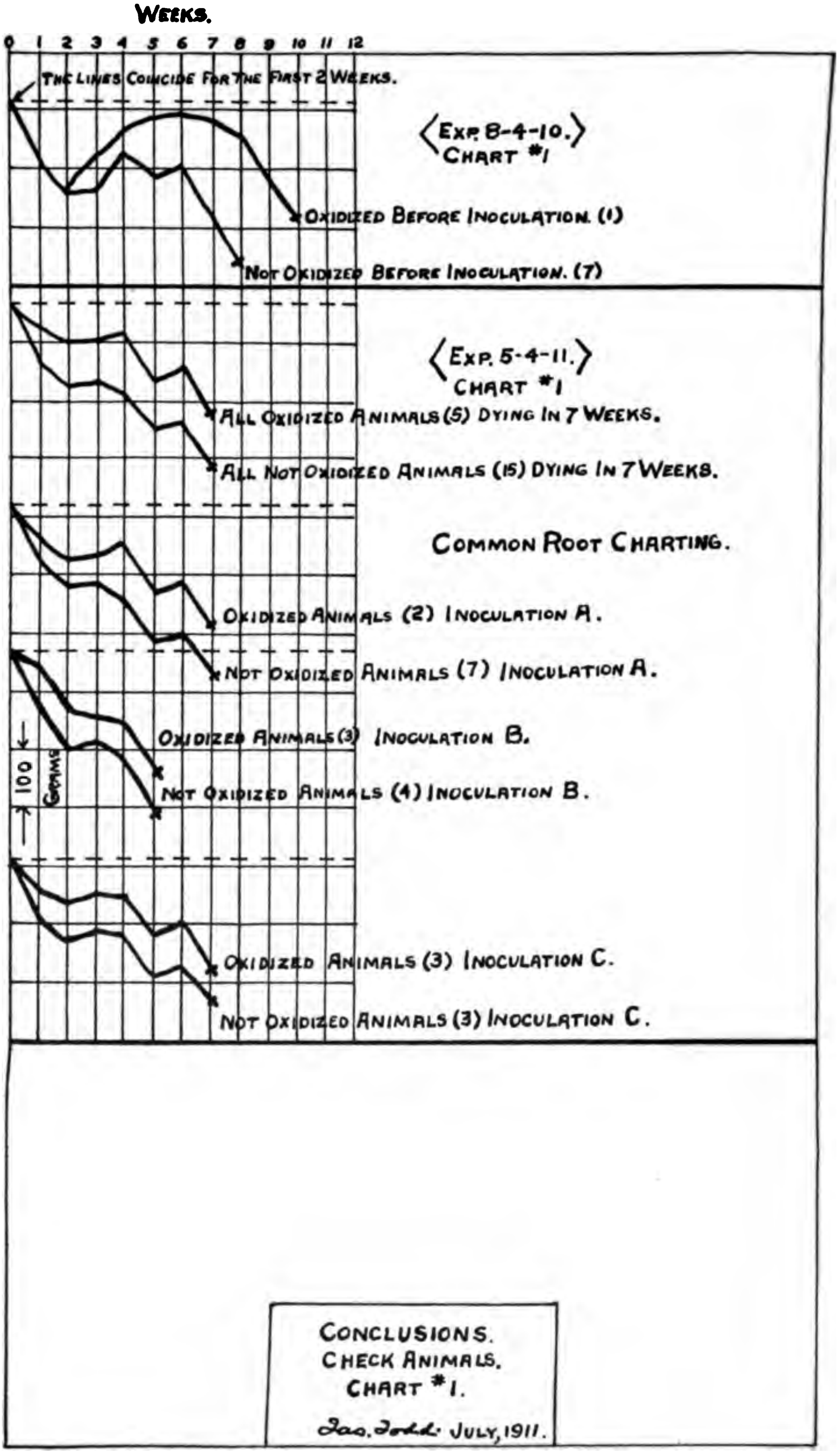
CONCLUSIONS BASED UPON THE FIRST SECTION OF THE ANIMAL EXPERIMENTS

We hope that by this time the fact of the very close conformity in the records of the animals in any particular section of the experiments has been noted as, believing that we have proved our case by the large number of individual demonstrations presented, we shall throughout the rest of our work largely use average curves.

The number of animals in the different curves will be found to vary in number and also to often not account for all the animals used in a section of the work. This is due to the fact that only animals dying at the same time can be placed in average curves, as otherwise the curves would be false.

The drawings upon which we base our conclusions are five in number and cover principally the contrasts between the natural or unopposed disease as demonstrated by the records of the check animals, compared to the effects of the disease when opposed by intensified oxygen. The drawings are both simple and conclusive and are so important that we trust they will be studied closely, realizing that they are facts.

On page 240 we place the drawing CONCLUSIONS—CHECK ANIMALS, CHART NO. 1.



CONCLUSIONS.
CHECK ANIMALS.
CHART #1.
Jas. Todd. JULY, 1911.

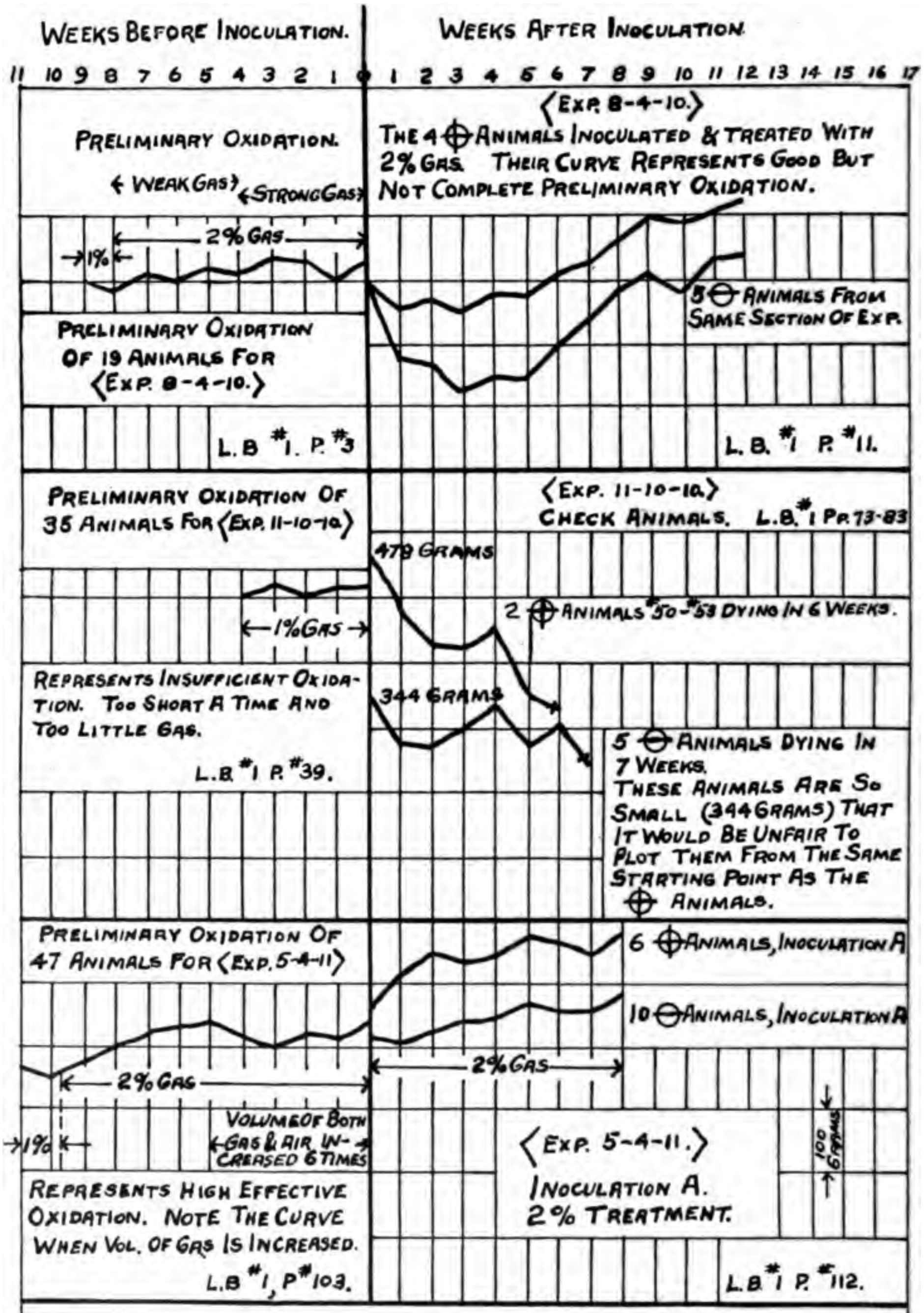
By common root charting we here compare the weight changes, from inoculation to death, of the oxidized before inoculation check animal, the ⌖, and the natural check animal, the ⊖. The only comment we make is to draw attention to the fact that in each case the top line is of the previously oxidized animal. *Here our reasoning in regard to the importance of oxygen in organic life is proved by the check animals.* This drawing covers all experiments in which previously oxidized check animals were used.

On page 242 we place the drawing CONCLUSION CHART NO. 2—EFFECT OF PRELIMINARY OXIDATION.

On the left side of the drawing are the weight curves during preliminary oxidation. On the right section are the lines compared to natural animals after inoculation. All animals compared together were inoculated identically. This is an old drawing with a great deal of important information printed upon it and clearly shows the never varying good effects of preliminary oxidation when sufficiently carried out as compared to inefficient use of it as shown by the November Experiment (EXPERIMENT 11–10–10). We leave these drawings to speak for themselves.

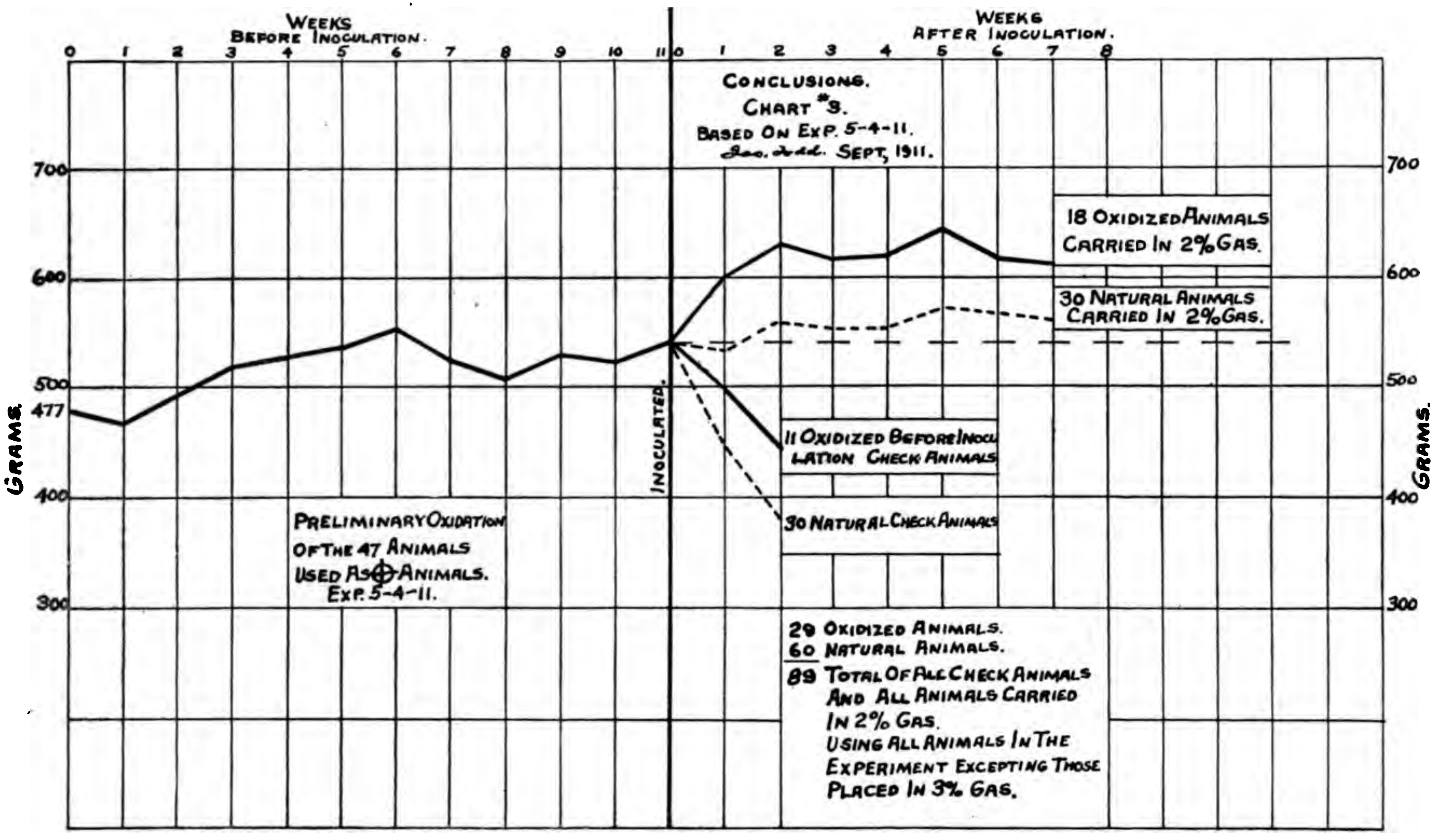
On page 243 we place the drawing CONCLUSIONS CHART NO. 3—BASED ON EXPERIMENT 5–4–11.

On this drawing we give first the weight changes during preliminary oxidation of all the animals oxidized previous to inoculation for the First May Experiment. The record after inoculation does not carry those animals inoculated and carried afterward in three per. cent of the intensified oxygen, as three per cent. of the gas was too depressive. All the animals carried in two per cent. of gas and all check animals are on the drawing; they number eighty-nine and the different divisions are all plainly marked. The natural animals are all represented by dotted lines, the oxidized ones by solid lines.



EFFECT OF PRELIMINARY OXIDATION.

CONCLUSIONS.
CHART #2
Geo. Todd JULY, 1911.


CONCLUSIONS.
CHART #3.
BASED ON EXP. 5-4-11.
Geo. Todd. SEPT, 1911.
WEEKS BEFORE INOCULATION.
0
1
2
3
4
5
6
7
8
9
10
11
WEEKS AFTER INOCULATION.
0
1
2
3
4
5
6
7
8
700
600
500
477
400
300
GRAMS.
INOCULATED.
18 OXIDIZED ANIMALS CARRIED IN 2% GAS.
30 NATURAL ANIMALS CARRIED IN 2% GAS.
11 OXIDIZED BEFORE INOCULATION CHECK ANIMALS
30 NATURAL CHECK ANIMALS
PRELIMINARY OXIDATION OF THE 47 ANIMALS USED AS ⊕ ANIMALS. EXP. 5-4-11.
29 OXIDIZED ANIMALS.
60 NATURAL ANIMALS.
89 TOTAL OF ALL CHECK ANIMALS AND ALL ANIMALS CARRIED IN 2% GAS.
USING ALL ANIMALS IN THE EXPERIMENT EXCEPTING THOSE PLACED IN 3% GAS.

The results are so wonderful and so conclusive that we again leave them without comment, for explanation seems so inadequate a method to apply to such self-evident facts.

On page 245 we place the drawing CONCLUSIONS CHART NO. 4—BASED ON ALL THE ANIMALS FROM ALL THE EXPERIMENTS.

The drawing is so simple as to be self-explanatory, we having simply drawn all our work together and ignored all distinctions except the fact as to whether the animals were check animals or those carried through the process. Each line ends at the first death except for a very few animals eliminated to make the period charted practical.

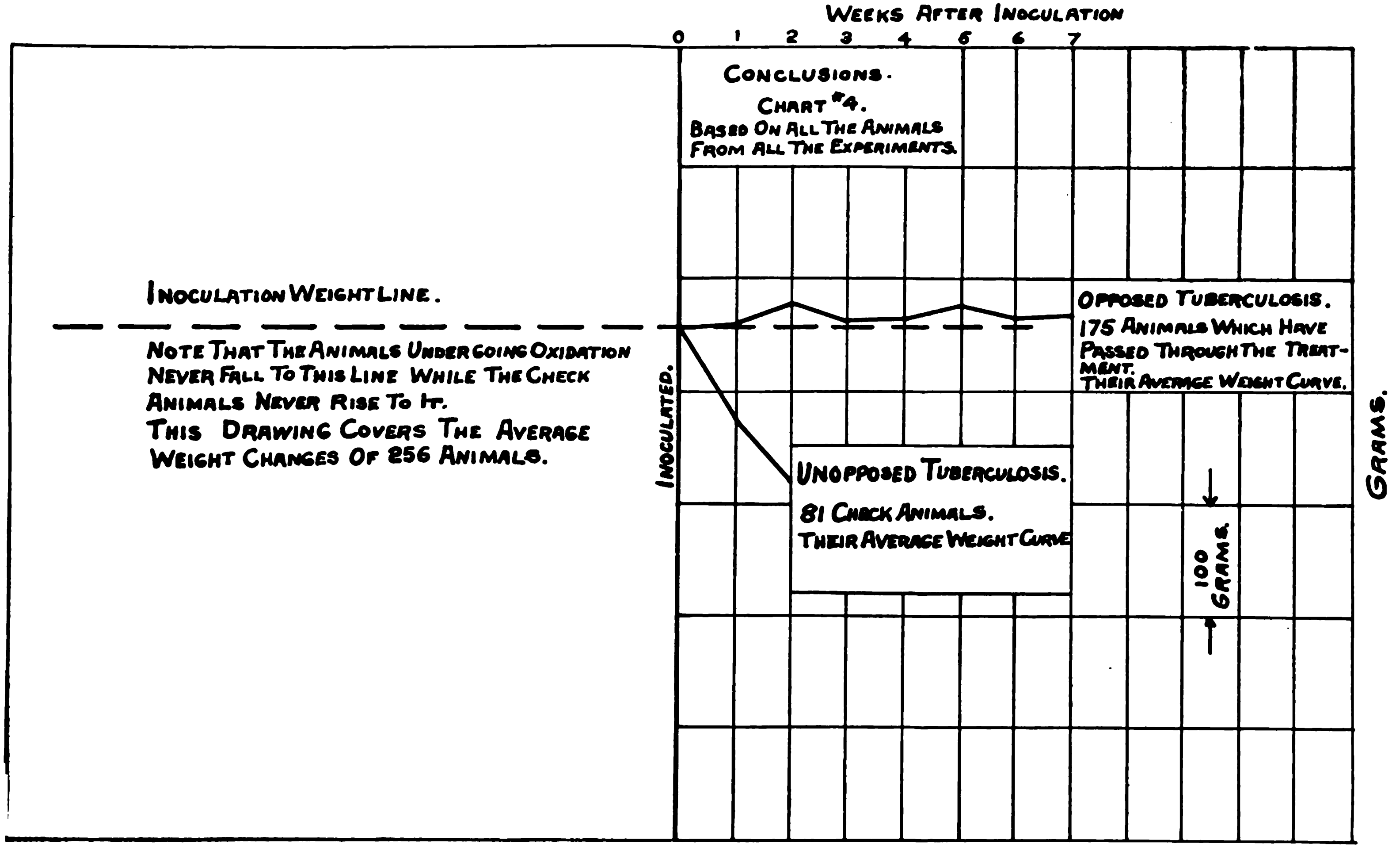
We ask careful note of the wording on the drawing and the fact that in this final test of our process we use more than two hundred and fifty animals.

Again we leave the demonstrated truth of the power of oxygen to your judgment and turn to the drawing CONCLUSIONS CHART NO. 5—THE DRAWING OF THE ELEVEN FACTS, page 246.

We have here demonstrated not animal records but rather the simple truths of the power of intensified oxygen, using a drawing for the purpose of emphasis. We have not brought our comparisons down to a question of exact time and effect but have chosen to deal with the simple, true records of our work in a broad sense; neither have we undertaken to record all the truth because what we show is surely sufficient.

The only explanation necessary is as to facts Nine and Ten. When an animal is fighting for his life with the tubercle bacillus, he needs nature's opposing force to aid him and he can imbibe such quantities of intensified oxygen, in his need, which if taken when the germ was not attacking him would quickly kill.

The eleven established facts deliberately placed upon this drawing for the purpose of emphasizing them are important beyond mere discussion, for they establish the fact that the fight against disease


Weeks After Inoculation
0
1
2
3
4
5
6
7
Conclusions.
Chart #4.
Based On All The Animals From All The Experiments.
Inoculation Weight Line.
Note That The Animals Undergoing Oxidation Never Fall To This Line While The Check Animals Never Rise To It.
This Drawing Covers The Average Weight Changes Of 256 Animals.
Inoculated.
Opposed Tuberculosis.
175 Animals Which Have Passed Through The Treatment.
Their Average Weight Curve.
Unopposed Tuberculosis.
81 Check Animals.
Their Average Weight Curve
100 Grams.
Grams.

Sept. 1911

The Drawing Of The Eleven Facts.

Conclusions, Chart #5.

1.

The Animal Oxidized Before Inoculation Always Shows The Beneficial Results Of His Preliminary Oxidation.

2.

No Check Animal Has Ever Outlived The Inoculation.

3.

Animals Under The Treatment Have Outlived The Inoculation.

4.

No Inoculated Check Animal Has Ever Developed Tubercular Healing.

5.

Inoculated Animals Placed Under The Treatment Have Frequently Developed Tubercular Healing.

6.

The Animals Placed Under The Treatment Live Longer Than The Check Animals.

(Based On A Month As Four Weeks.)

7.

No Check Animal Has Ever Lived 6 Months After Inoculation.

8.

Animals Placed Under The Treatment Have Lived 18 Months.

9.

No Inoculated Animal Has Ever Died From The Effects Of The Gas Where Less Than 4% Was Used.

10.

Many Deaths Have Occurred Where Animals Have Been Undergoing Preliminary Oxidation.

11.

Resistance To The Disease Tuberculosis Has Been Undeniably Established In This Most Delicate Animal.

Jas. Todd February 1913.

should be developed along the lines of common sense and broad chemical principles.

In leaving the first section of our animal experiments, we would ask you to face the question as to whether we have proved, as we have worked so long and so hard to prove by hard-won facts, the power for good of this changeable element OXYGEN and if we have, what duty the world owes, not to us, for we wish nothing, but rather to itself, that it may not lose the promise of it all.

This portion of our experiments with animals is here divided from the future work for two reasons; the one because the rest of the experiments are all designed to penetrate the mystery surrounding our problem, and the other because the general character of the force of the germs used here changes and so demonstrates that the tubercle bacillus is also a changeable force.

THE PROBLEM CONFRONTING US

We are now to face our problem in all its many phases and we would ask leniency with us and our method of writing as, on account of the number of factors, it is impossible to deal as tersely and clearly with the subject as we would wish, for we must endeavor to include every possible factor and every one of its possible effects.

It is plainly apparent that the first two experiments were more successful than the latter ones; that the November Experiment gave results, even when considered in connection with the mistakes in its design, much below those attained in the January and August Experiments. Moreover while making allowance for the benefit of the radical improvement caused in the First May Experiment by increasing the quantity of air and gas used in the animal rooms, we find that although the May Experiment was far ahead of the November Experiment yet it was not up to the January Experiment with tubercular healing present in every animal, nor to the August Experiment with its record of complete and permanent recovery.

Due to conditions which we will now consider and explain in detail, the operation of our machinery has been radically changed and the change, which was a gradual one, became effective at about the time of starting the November Experiment.

The January and August Experiments gave, at the start, falling weight curves which were followed at about the fourth or fifth week by strongly rising curves, the heavy increase in weight being maintained for a number of weeks. This condition was common to all the animals. Since then this very marked characteristic has almost, if not quite, disappeared. It is absent in the November Experiment and rarely, if at all, present in the First May Experiment.

In the January Experiment tubercular healing was present in every animal, absent in the November Experiment, and only occasionally present in the May Experiment.

This problem so plainly showing itself in the results is, in our judgment, probably mechanical or electrical. Mechanical operations affected chemical activity to such an extent as to change the work from a marked success to a less strong position, and taught us the lesson that the path is not free from obstacles; that we were not going to stumble, as it were, into the accomplishment of practical oxidation. The task before us now is to recover our lost position and above all to discover how and why we lost it, else we may not maintain it after we do recover it.

We shall pass now to the engine room and put down in full detail, for no factor must be missed, the operation of the machinery during the first two experiments.

The air in passing to the engine room was drawn down through a stack sixty feet high, then passed under ground in iron pipes about sixty feet to a point where it came up through a pipe into the "ozone" generator. In the generator were four cells each consisting of thirty-two six-inch square aluminum "mattresses" insulated from each other by glass plates which were about eight inches square and an eighth of an inch thick. The high tension current was held in these "mattresses," and the air flowing through them was acted upon by the electric current ("ozonized") and passed onward in its path to the animal rooms.

The case containing the four cells was of cast iron. The pipes leading from this case were ordinary five-inch iron pipes. The "ozonized" air passed through these pipes for about twelve feet and was then drawn into a small cast-iron Root blower, which first drew the air through the "ozone" generators and then *forced* it through brass pipes to the animal rooms, a distance of one hundred and sixty-seven feet.

In the chemical section we have given some very remarkable results obtained from exposing "ozone" to oxides of iron. It is very necessary to emphasize this, for it may be the clue to the result sought. Here it is sufficient to say that after being exposed to the effect of the electric current, the air was always exposed to intimate contact with iron because, first, all the piping and fittings to the blower were iron; second, because the air was compressed against the iron revolvers in the blower. The contact here was very close. The air in travelling to the animals passed through the pipe line for upwards of one hundred and seventy feet and, although the pipes were brass, we found them very heavily coated inside with oxide of iron, probably caused by the gas attacking the iron pipes and blower.

In this phase of the question notice that the air was drawn, not forced, through the "ozone" generators. The attenuation of the air as compared to its compression, as later shown, may be a vital factor. Notice also that from the moment the air was ozonized it was in direct contact with iron.

The electric current used to act upon the air was first generated by a small, specially wound dynamo, which delivered 100 volts, at very low amperage, to an ordinary transformer. The transformer then built the current up on a multiple of 66, thus delivering 6,600 volts to the ozone-generating cells.

During a period of more than two years, commencing at about the time of the starting of the November Experiment, the men operating the machinery could not maintain the required voltage on the glass plates and there was a gradual decrease from 6,600 volts to 6,000, or slightly less, by "burn outs," due to the cracking of the glass plates.

This trouble grew more and more serious until it was difficult to maintain 90 volts on the dynamos; in fact, the cells have broken down at 90 volts perhaps as often as ten times an hour. This required the attention of eight or ten men who did nothing but rebuild and replace glass cells in the cases. It was not practically possible to hold the cells up to their work.

For two years we bent every energy to the solution of this problem of insulation and in the end discovered a very simple cause, easily corrected, which allowed us to move forward in good control of the situation.

It is not necessary to retrace our steps to find the cause of the trouble. The solution came about in this way. We abandoned glass plates and insulated with sheets of paper fiber and attained the required voltage, but in a few weeks they burned up. Then sheets of vulcanized rubber were tried. Again we held the voltage, but in five weeks they too burned up. When, however, two cells which had no connection that would allow fire to pass from one to the other, burned, one in the morning and one in the afternoon of the same day, both having been in constant use for five weeks, we commenced to see that something radical was taking place.

Dr. Riddle here suggested that we insulate with sheets of roofing slate, as it was hard and could not burn. This we did and in ten weeks the cells broke down and the secret was out, for the slate had changed from a hard, brittle material to a soft chalky condition.

The cause had at last become obvious and proved to be nothing more than that any insulation has but a certain life under the stress of the conditions to which it was here subjected. That the life should vary, as was the case here, with different materials seems altogether natural. In the glass we could see nothing but the cracked plate; the paper and the rubber burned up; but the slate, not being combustible, stayed and yielded its secret by becoming soft.

There were thirty-two glass plates in each generating cell. When one broke we quite naturally put in a new one together with the thirty-one old ones. But the glass continued to break. We now use only new glass plates and renew them all about every six months and the trouble has almost disappeared.

The discovery of the trouble with the insulation and its correction have wrought a very apparent change in operation which may mean a very vital change in the result.

In the chemical and mechanical section of this book we speak plainly as regards the ozone theory and we here state our belief that so-called "ozone" is really a number of gases, the character of which is at least dependent upon the speed of the passage of the air, the temperature, the voltage used and the character of the insulation. Finding it apparently affected by so many factors we must look with care at all possible changes, hence for our purpose here we assume "ozone" to be a number of gases, all of an ozidizing nature, but not all the same in either power or result. Further, we assume, for our purposes here, that which may well be so, namely, that some types of the gas will oxidize so perfectly as to cause cures, some will only act to the point of causing resistance to the disease; while still a third class have little or no effect in oxidizing the living body.

NITROGEN AS A POSSIBLE ASSISTANT TO OXYGEN

In our opinion nitrogen is the most mysterious of all the elements entering organic life. The generally assumed interpretation of it is that its chief characteristic is inertness and that in the atmosphere it is simply a diluter of the oxygen we breathe. But while it seems to lie, as it were, asleep to the superficial view, yet once aroused it becomes in very truth a giant. It is the base of the most violent in action of our compounds, the explosives. It is also one of the four predominating elements in our bodies and, for our purpose, has a wonderful significance in that it is one of what we call the ever-present elements, the elements of the atmosphere in which we are continually immersed. Long since we made up our minds to watch it closely, for oxygen might well need an assistant in its continual struggle with carbon and hydrogen.

Further, in nitrogen's only known point of elimination from the body we find the formula of uric acid to be $C_5H_4N_4O_3$ and of urea $CO(NH_2)_2$ and while oxygen is present in both cases, yet we find too little of it to carry forth from the body the large amount of carbon and hydrogen. In all other eliminations the oxygen is present in full strength (CO_2 and H_2O).

We may not be far wrong if we keep before us this mysterious element of the atmosphere and conclude that we shall consider oxygen as a vehicle of elimination for carbon and hydrogen when their forces have been spent in the reactions of life, and that perhaps nitrogen is its ever-present assistant.

Something must be done, we cannot stand still, nor can we afford to blindly grope. It is all essential to have a foundation from which to think and so we place the problem of nitrogen peroxide as possibly affecting our work.

To look now from theory to fact. When we operated our machinery at full power, 100 volts on the dynamos and 6,600 on the ozone generators, using glass insulation (we have never detected the presence of compounds of nitrogen except when using glass insulation), we found definite quantities of nitric acid present, so much so that we had to put drip pipes in the lines to take care of it on account of its destruction of the pipes and fittings. Further, when we investigated the oxides of iron which we have said were abundantly present in the pipe lines, we always found peroxide of nitrogen present. When the oxides were put in a test tube and heated we always obtained the orange-red gas NO_2.

When operating the machinery at 90 volts with glass insulation (5,940 on the "ozone" generators), we never found any evidence of the presence of nitrogen compounds. To make this doubly sure we placed some chemically pure ferric oxide in constant exposure to the gas for fifty days while operating at the lower voltage and we were unable, even after this long exposure, to obtain the least trace of NO_2 in it, thus well proving that compounds of nitrogen were not, at least to any practical extent, present under such operations.

It might seem from this that having based our whole case on oxygen, in our dilemma we now cast it aside and grasp at another; but look at the case fairly. We are not wedded to oxygen beyond the point at which common sense can sustain us. We are bent on solving this problem so as to be able to control our bodies and free ourselves from this crushing load of misery. There are few who will acknowledge that our bodies, composed as they are of nothing but the elements, *must be governed by the laws of the elements*, and we must convince them.

We would grasp at anything within reason to accomplish our purpose, but we are not doing so in this case, because with nitrogen not present, when operating at the low voltage, we establish a strong, positive resistance to the disease with which we are demonstrating, a resistance we cannot afford to lose under any circumstances. Furthermore what is peroxide of nitrogen (NO_2)?

One atom of nitrogen and two of oxygen, a strong oxidizing agent. And it may be a better method for the introduction of oxygen than the other. We have already said that so-called "ozone" was used only because it was the most practical oxidizing agent we had at hand.

The writer is much inclined to the view that nitrogen oxides are not primarily present in the "ozonized" air as a result of "sparking" in the generators, which we believe is the general view of their formation, but that they are formed as the result of making a mixture of various forms of intensified oxygen, *some of which are powerful enough to oxidize nitrogen.*

If this should prove to be the case, the very gas that we apparently most need, if not foreseen and controlled, might waste its power in oxidizing nitrogen. Proper cooling of the generating cells and possible diluting of the "ozonized air" with pure air immediately after it leaves the ozonizing cell together with the use of the gas as nearly as possible at the moment it is made would all tend to prevent such possible loss of vital power. With proper facilities we consider the problem will yield to investigation.

Up to the present we have in our explanations paid little attention to certain markings on the drawing of the animals that lived more than a year from the First May Experiment. We will now consider the drawing on folding chart facing page 226, for the purpose of dealing with the questions of voltage and nitrogen as possibly affecting our work, for the reason that these animals with their remarkable record of prolonged life, by chance, as thoroughly as if by design, lived exposed to all the different voltages and insulating materials used in the solution of the problem of insulation.

In this drawing we study and follow in this new light the two upper animals, these being the only ones that lived to pass through all the phases. Placed under glass insulation at the low voltage they pass forward for forty-nine weeks. During the first forty-one weeks they lived comfortably, strongly resisting the disease. Then they received a blow. The clock-like precision of tuberculosis is always making itself apparent and here it will be noticed that all the animals experienced a blow at this time. They rose a little from this blow but became decadent. At forty-nine weeks they commenced to pass through the period of exposure to gas made at the high voltage with rubber insulation, but no effect is shown; they still continuing decadent. At a period of fifty-four weeks the change to slate insulation at the high voltage was reached, but still they followed their path of depression until at sixty-four weeks, when, unfortunately, past all hope of recovery, as they were literally devoured by the tubercle bacilli which had for more than a year been destroying their organs, they passed into the period of glass insulation with 6,700 volts acting on the generating cells. Compounds of nitrogen were also present. Both animals strongly responded in their curves to what would here appear to be the proper combination in machinery operation.

OTHER VARYING FACTORS

In the original operation of our machinery we drew the air through the apparatus while now we are forcing it. In the one case the air is stretched, in the other compressed into slightly smaller volume.

The attenuation of the air in the old method was about one half inch of water pressure; the compression used was about ten inches of water pressure.

In the old method of operating, the "ozonized" air was exposed to contact with iron, now there is no such contact, as our generating cells are enamelled inside and only tin, which "ozone" does not attack, and brass pipes, are used in transporting it.

In the old method of operating, the "ozonized" air passed one hundred and seventy feet through pipes to the animal room, while now the generators are not over twenty feet from the first animals.

To our mind it is peculiarly significant that, since we have adopted our new type generator, in which the air is *forced* through enamelled generators with a short passage (20 feet) to the animal rooms and no contact with iron, *we have had no cases of tubercular healing.*

We have had tubercular healing with both 6,000 and 6,600 volts when the air was *drawn* through cast-iron generators and had a long travel (170 feet) to the animals.

In speaking of the inoculations we have always spoken of using a mixture of three different strains of germs from different human sources, but this is because we are writing years after some of this work was done. The first two experiments were inoculated with but one strain of germs.

It is conceivable that this may be the cause of the difference. Once established as a fact it would not make much difference, because human beings afflicted with tuberculosis must, at least generally, have not a mixture but rather each his own particular form or strain of germs.

The thickness of the glass plates used in the "ozone" generators may well affect the result. We are now using plates about one eighth of an inch thick. We do not know positively the thickness of those originally used but think they were thinner.

The "mattresses" in which the high tension current is held as the air flows through them are of thin ribbon aluminum. They have been used for more than five years and the slight amount of oxide of aluminum on them may have some effect.

The quantity of gas used in the animal rooms should be more thoroughly investigated, for when we gathered the information that has led us to use two per cent. as equal in effect to three per cent., the machinery was operating at the low voltage, so that, on heavily inoculated animals, three or even four per cent. of the high tension gas might be advantageously used during the early stages of an experiment, say the first two, or possibly four weeks, or less of the high tension gas may be better.

Perhaps a longer period of preliminary oxidation might give still more conclusive proof.

We feel strongly that the best course to follow is to study the effect of different factors on the *character* of the weight curves, placing reliance on operations which gave, during the first three to five weeks, generally falling and rapidly changing curves. These curves should immediately after this period change to well maintained, strongly rising lines, as shown in the August Experiment.

It would seem hardly necessary for us, in view of the complicated nature of the problem, to warn against the use of a different method of making "ozonized air" from that used by us. At this stage and until the problem is fully worked out no change must be made. After that time some of the modern methods may be taken up if the necessary preliminary investigation of them is thorough and conservative.

In our judgment the modern "ozone" generators are based too much upon attaining the largest possible yield of the gas, whereas uniformity, rather than quantity, is the line that must be followed.

The question raised by the problem of still higher voltage is worthy of careful investigation.

Full details of our machinery and its operation will be freely supplied to any who require it for purposes of legitimate investigation; we fortunately have very complete daily records kept during the January Experiment.

Judging this all-important problem by our best evidence, and yet keeping all possible changes in operation before us, we can rightly draw the conclusion that probably the solution lies in one of these directions, viz.:

1. The strange effect of iron upon so-called ozone.
2. The effect of insulation.
3. The effect of electrical tension.
4. The effect of the nitrogen problem.
5. The effect of attenuation as compared with compression of the air as it passes through the electrical discharge.

In our judgment, it appears to tend toward glass insulation, high voltage, possibly nitrogen peroxide and the proper preparation of the air; a very abstruse problem.

The course that we are following in seeking the successful solution of the problem (the work is now under way and we hope to be able to state the trend of the results in the publication of this book) is first to establish or remove nitrogen peroxide as a factor. If we strongly establish it, the work is done. Failing to establish it, we shall go back to the identical operation of the original machinery and eliminate factor after factor. This course, if the necessary aid is forthcoming, must bring final success, because we are not advancing on theory alone but rather on the facts of the first two experiments—tubercular healing and life.

Here, for the present, the problem rests, *based on facts.*

Note: A careful study of the CHEMICAL AND MECHANICAL SECTION is necessary to a full conception of the problem.

NOTE: Through the investigation of another question evidence has developed tending to show that the transformers used were built upon a multiple of 60 instead of 66. If this is a fact it changes all the statements of voltage used during the animal experimemts. I find that I cannot correct this possible mistake by changing the text as the matter also appears on the drawings, so I have decided to attract attention to it by this note. J. T.

THE SECOND SECTION OF THE ANIMAL EXPERIMENTS

PREFACE

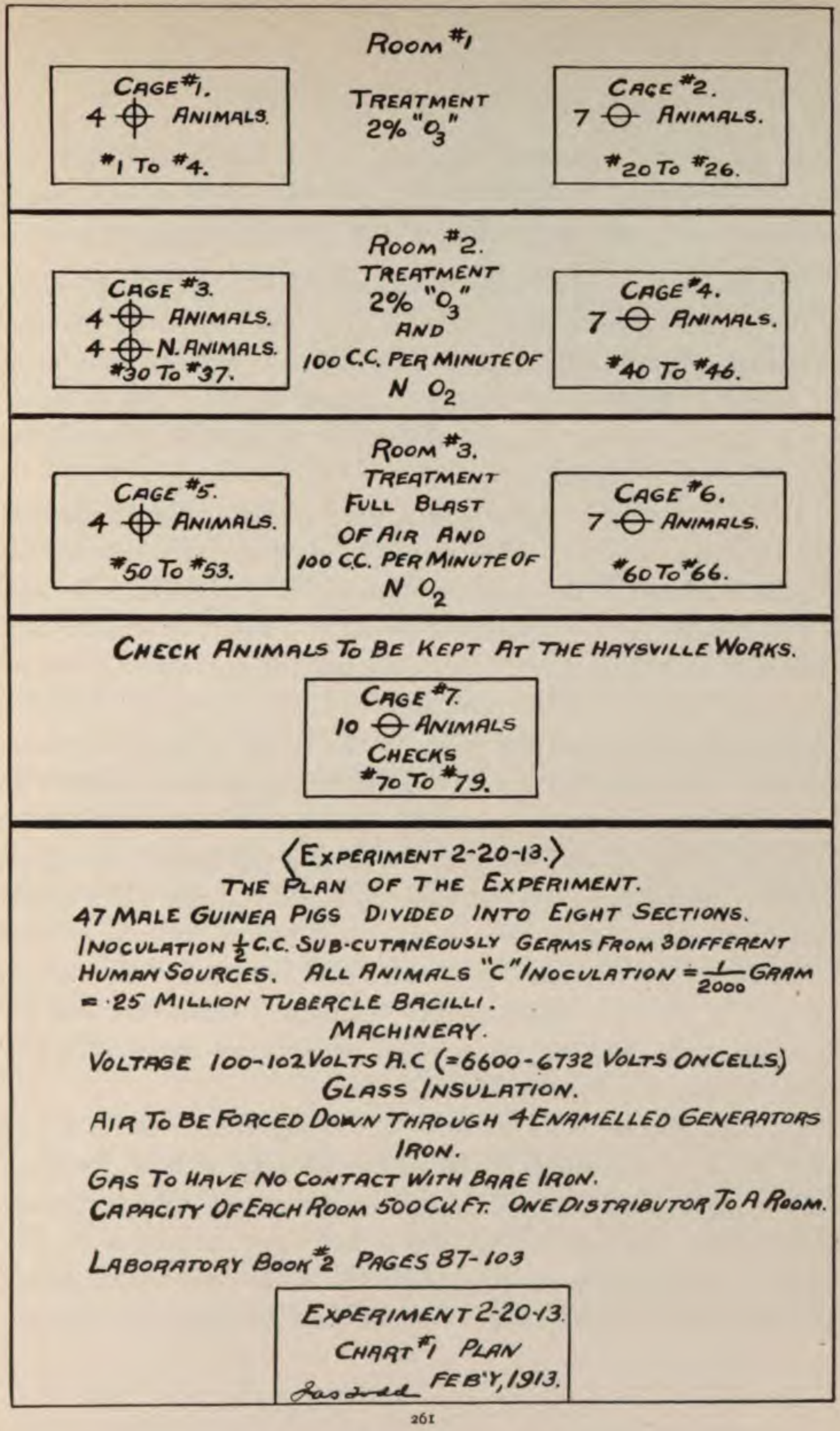
The publication of this book having been held back for the purpose of carrying on further experiments, in an endeavor to outline the problem more distinctly, means that this section, including, as it does, the last of the animal experiments, is the last that we shall write, although it cannot come last in the arrangement of the book.

We are now face to face with exceedingly important and far-reaching questions as we find that we must not be content to show merely the trend of the separate experiments, but that we must take our work as a whole and prove that which was beyond our conception when we first undertook it; namely, that oxygen *can and does take many forms*.

This new conception of the activities of the element is more far-reaching than can now be seen. We will endeavor to establish it as a fact by showing that it is the only line of reasoning *which can and does fully explain our work from one end to the other.*

In this connection we wish to bring out distinctly the fact that when we speak of the different "forms" of an element, we do not limit ourselves to a narrow interpretation of the word "form." We do not care for shape nor changes in volume; it is *activities* with which we deal in the broadest sense of the word—the activities of an element changed, in our case at least, by power applied from without the element.

We have not attained a full solution of the problem, as we have failed for lack of facilities, but we do prove the principles involved and present the problem within comparatively narrow limits, as well as adding much to our accumulation of facts and our power to reason along these new lines of thought.



Room #1

Cage #1.
4 ⊕ Animals.
#1 To #4.

Treatment
2% "O_3"

Cage #2.
7 ⊖ Animals.
#20 To #26.

Room #2.
Treatment
2% "O_3"
And
100 C.C. Per Minute Of
NO_2

Cage #3.
4 ⊕ Animals.
4 ⊕ N. Animals.
#30 To #37.

Cage #4.
7 ⊖ Animals.
#40 To #46.

Room #3.
Treatment
Full Blast
Of Air And
100 CC. Per Minute Of
NO_2

Cage #5.
4 ⊕ Animals.
#50 To #53.

Cage #6.
7 ⊖ Animals.
#60 To #66.

Check Animals To Be Kept At The Haysville Works.

Cage #7.
10 ⊖ Animals
Checks
#70 To #79.

⟨Experiment 2-20-13.⟩
The Plan Of The Experiment.

47 Male Guinea Pigs Divided Into Eight Sections.
Inoculation $\frac{1}{2}$ C.C. Sub-cutaneously Germs From 3 Different Human Sources. All Animals "C" Inoculation = $\frac{1}{2000}$ Gram = ·25 Million Tubercle Bacilli.

Machinery.

Voltage 100-102 Volts A.C (=6600-6732 Volts On Cells)

Glass Insulation.

Air To Be Forced Down Through 4 Enamelled Generators

Iron.

Gas To Have No Contact With Bare Iron.
Capacity Of Each Room 500 Cu. Ft. One Distributor To A Room.

Laboratory Book #2 Pages 87-103

Experiment 2-20-13.
Chart #1 Plan
Jas Judd Feb'y, 1913.

EXPERIMENT 2-20-13

THE NITROGEN EXPERIMENT

The prominence of peroxide of nitrogen (NO_2) as a possible factor in the earlier experiments, required that the design of the next experiment should be based upon an attempt to either sustain nitrogen oxides as vital to the process or dispose of them, and so we designed this experiment to meet, as broadly as possible, the full scope of the nitrogen problem.

The design of the experiment is good for the purpose required, even though it was hampered at the start by the fact that we had no data in regard to the quantity of peroxide of nitrogen to be used on the animals, but our facilities would not admit of separate and protracted experiments upon this question, consequently we decided to use one hundred cubic centimeters of NO_2 per minute, continuously generated within the room by the action of nitric acid upon iron and made possible by a very simple apparatus designed by Doctor Riddle.

Slightly diluted acid was dropped from a tap funnel, in uniform quantity, upon a large mass of small iron nails, at a rate which careful experiment showed to yield closely to 100 c.c. of NO_2 per minute.

The blast of pure air from the distributor kept the nitrogen peroxide in constant quantity and thoroughly diffused. Day and night, for more than one year, the animals in two rooms were kept under the constant influence of the oxide.

On page 261 we place the plan of the experiment and ask close study of it, as the whole scope of the question is here presented. Besides using both oxidized and natural animals, we also include four animals, in cage No. 3, which had been treated with both "ozone" and peroxide of nitrogen for ten weeks *before* their inoculation, thus giving us the effect of preliminary treatment by means of peroxide of nitrogen. Please note and understand this phase of the experiment, as it becomes important later. The animals are marked ⊕ N to distinguish them from the ordinary ⊕ ones, and are placed, after inoculation, with other animals in cage No. 3, Room No. 2, and are from that time continually under the influence of three forces; the tubercle bacilli, so-called ozone and nitrogen peroxide, and constantly under exactly the same conditions as both the natural and oxidized animals sharing their room.

The general plan of the experiment was to use three main groups of animals, each group consisting of both oxidized and natural animals and each main group in a sepatate room and each room, under a different prescribed condition of oxidation, oxidation and nitrification, or nitrification alone.

In Room No. 1 we used two per cent. of "ozone," thus having both natural and oxidized animals under the regular process.

In Room No. 2 we used two per cent. of "ozone" and 100 c.c. per minute of NO_2, thus exposing both oxidized and natural animals to the combined action of both gases.

In this room were also included the four animals before referred to which had been treated with both "ozone" and NO_2, before their inoculation, and marked ⊕ N.

In Room No. 3 we excluded the "ozone" and used NO_2 alone Thus we have, opposed to the power of the same inoculation:

In Room No. 1 "ozone" alone.

In Room No. 2 "ozone" and peroxide of nitrogen.

In Room No. 3 peroxide of nitrogen alone.

In each room there was a blast of pure air from the distributor.

The machinery operations are all shown on the plan. Please note that the air is to be *forced* through the "ozone" generators, as this becomes very important later.

Now that we understand the plan, let us look at the results.

At the start we make use of the most complicated drawing yet used in this work, as we find it necessary to bring together many factors and we must rely strongly upon familiarity with this and other drawings, or at least willingness to study them sufficiently to understand the subject.

In all the drawings used in this section of the book we have adopted, in the weight curves, a dotted line for the natural animals and a solid line for the oxidized ones, thus keeping the curves absolutely distinct on the question of ⊕ and ⊖.

On page 265 we place the drawing EXPERIMENT 2–20–13—CHART NO. 2.

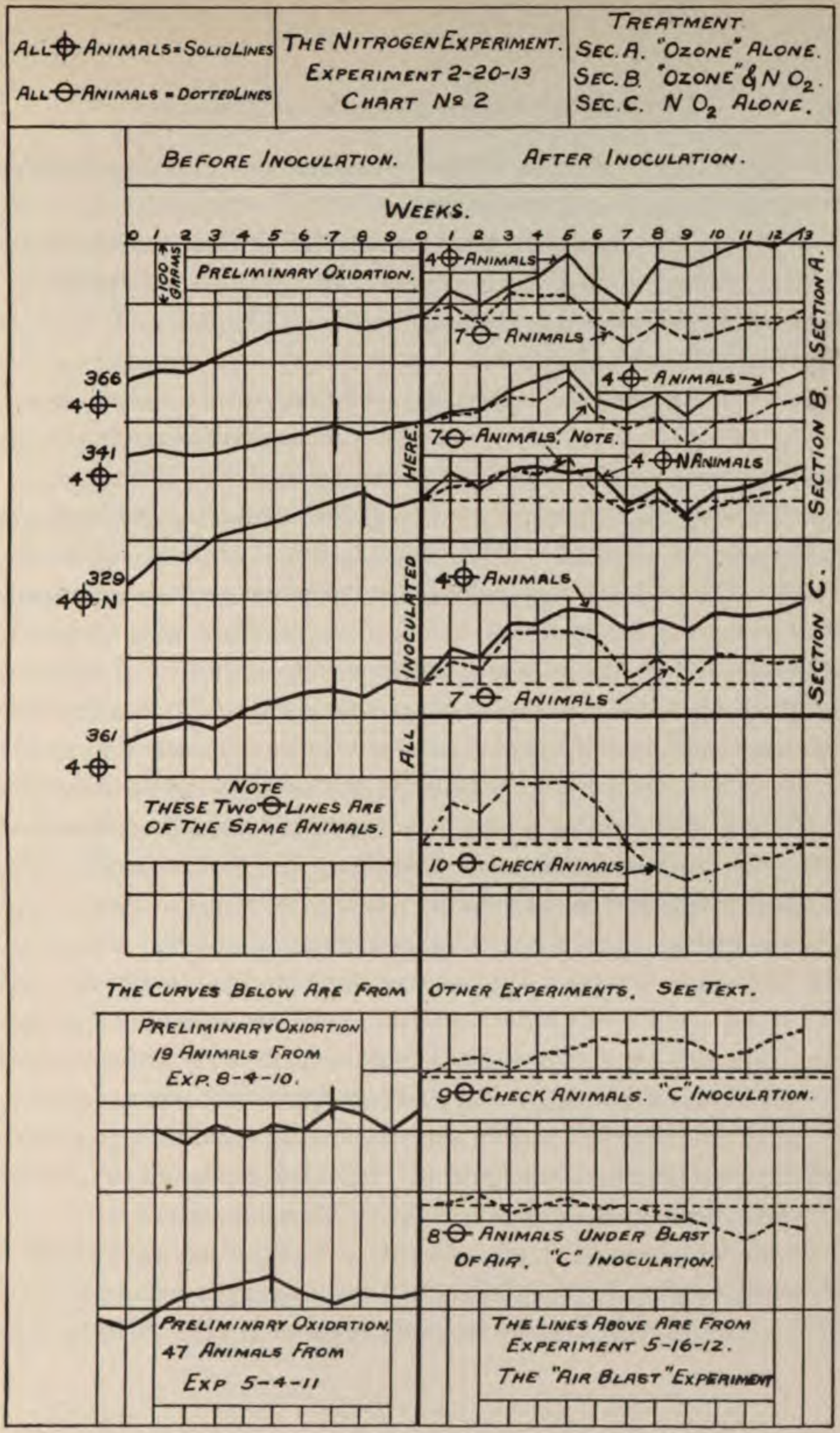
This drawing covers so much that it is necessary to proceed very systematically in its study, hence we will commence on the upper left side, this being the initial place in the study of the work. In this section of the drawing are the four weight curves of the four groups of oxidized animals during their preliminary oxidation.

We wish first to draw attention to the upper curve at the seventh week; we having placed a heavy perpendicular line crossing the weight curve at this point to attract attention.

Notice the distinct downward dip from the seventh to the eighth week and then the recovery.

During preliminary oxidation we have always noted this slight but exceedingly distinct change in the weight curve and it has been so persistently present as to force attention and to hold it after once discovered. It not only occurs in average curves but almost always in the individual and is worthy of consideration, and we are so convinced that it is a distinct mark of our work that we would hesitate to consider an animal properly oxidized that did not show it.

Aided by the heavier perpendicular line that has been placed in each case where the dip commences, we ask you to look at these four weight curves and notice how this line occurs in each case.



Jas. Todd JAN. 1914.

It is a week later in the case of the four animals that are being treated with both nitrogen and oxygen.

Now pass to the curves at the lower left in the section of preliminary oxidation, as we have placed here the curves of preliminary oxidation taken from our previous work, the August and the First May Experiments.

In both experiments, covering in the one case nineteen animals and in the other forty-seven, we get the same distinct fall in the weight curve of preliminary oxidation at practically the same time.

This means something and has so impressed us that, while having no explanation to offer, yet we place it thus distinctly before you.

We will now leave the preliminary oxidation section and pass to the inoculation, bearing well in mind that we are now facing, by deliberate design, the tubercle bacilli in unchanged force from one end of our experiment to the other, as we have inoculated each animal with the same quantity of the same germs on the same day so that the germs are prevented from injuring our work by acting differently in different cases, consequently any marked changes in the animals will be due to the conditions of oxidation or nitrification under which we have deliberately placed them.

At last we are face to face with the nitrogen problem. Entrancing and elusive as it has been, it must now divulge something of its truth; not all, for we are not fully equipped, as we do not know just how much NO_2 to use and we also have traces of NO_2 present in our "ozone," due to the high voltage and the glass insulation.

Before starting to examine the problem we wish to step aside to make an explanation in regard to the check animals, not only in this experiment, but also in each of the following ones.

Those who seemed to wish to aid us at the time we were doing this work expressed the opinion that we should get our germs from a more authoritative source and suggested supplying them from an institution that they considered above criticism. We accepted the advice and have thereby injured our work quite a good deal by the use of germs so poorly cultured as to be very slow in their action on the animals.

In this experiment one check animal lived for thirty-six weeks and we have had to completely abandon another experiment, losing a year of hard work on it, because at the end of a year the check animals were perfectly well.

We place this on record here, not in the sense of criticism, but entirely for the purpose of showing the great necessity, if this work is to be brought to a successful issue, of our being supplied with the necessary resources to make us independent in every department.

Let us turn again to our drawing to study the curves after the inoculation. The weight curves are carried to the death of the first animal. The curve of the ten check animals which we will take first is the third curve from the bottom on the right-hand side; it is marked "10 ⊖ Check Animals."

Until the disease asserted itself at the end of the third week, these animals increased strongly in weight, then they held their own for two weeks, then fell rapidly to far below their weight when inoculated, partly recovered the loss, and then gradually died off, their autopsies showing them to be heavily involved with the disease in all their organs.

Taking this condition of affairs as the natural trend of the disease in this experiment, we will pass to the curves at the top of the drawing where we have four ⊕ and seven ⊖ animals placed under two per cent. of "ozone" but without any nitrogen compounds present, other than the traces made by the machinery operations.

While the seven natural ⊖ animals act much as the check animals, yet they do not drop as far or as rapidly. But, on looking at the solid curve showing the weight changes of the four previously oxidized animals, and tracing the line back through the preliminary oxidation period, we see that it fairly springs forward when the tubercle bacilli enter the bodies of the animals. For five weeks it rises, gaining more than one hundred grams per animal; then it falls back only to regain its full strength and power. We are here face to face with the most wonderful evidence of the power of oxidation that the work has yet shown.

In the First May Experiment (EXPERIMENT 5–4–11) the oxidized animals rose for three weeks, while here we find the movement continued for five weeks and then resumed in even greater strength.

Perhaps in our zeal we have, or shall, impress the reader with the idea that the curve that falls after inoculation and then rises is the only one we believe in, but this is not so; in the complexity of the situation, this strongly rising curve just after inoculation must not be cast aside.

The trouble with it is that it does not now maintain its advance quite far enough, but one of our real problems is to cause this curve to maintain its strength, for if we accomplish this it may even supersede the other and attain the most successful result.

We have often spoken of the ⊕ animals as compared to the ⊖ animals and the proofs they give of success in one of the greatest problems of the world, but we cannot say too much on such a subject. On looking at the curves again and again one cannot fail to be impressed by the truth they convey, nor turn away from their mute appeal for the millions that are dying. They are more important than nitrogen will ever be, for they demonstrate the effect of successful oxidation.

There are four animals in this group and *one half of them lived for more than sixty weeks.* We shall see more of them later.

Now let us take the next group of animals, the ones placed in "ozone" and nitrogen peroxide.

The animals do not rise as rapidly as the ones in the regular treatment, but note that the solid curve of the ⊕ draws away from the natural animals. More proof for the "ozone" process. Again ⊕ and ⊖.

The weight curves seem to show the animals overloaded; they rise heavily, as if they were carrying a burden.

Now let us take the next pair of curves which carry the four animals which were treated with both "ozone" and peroxide of nitrogen before their inoculation, the ⊕ N.

The evidence of the heavy load shown in the others here becomes more definite and the solid curve merges with the dotted, and glancing to the top of the drawing, and down through each pair of curves, we must admit that nitrogen, *as we have used it here*, loses its value and "ozone" proves itself. This is either the case or the combined treatment is too heavy.

Now we pass to the next set of curves where we are using only air and nitrogen peroxide. The load is lifted and the ⊕ again stands strongly forward.

The dotted curve of the natural animals does not fall below the inoculation weight as the check animals do; it always stays above. One of these seven natural animals lived for one year, and this fact, considered together with the weight changes, forces us to admit that we have evidence in favor of nitrogen peroxide, and the nitrogen problem is still before us unsolved, but apparently not so vital as we at one time thought, but more work must be done before a final judgment is passed.

The writer's opinion, given for what it is worth, is that nitrogen peroxide either as a nitrifier or as an oxidizer may well hold improvement for our process, but he does not think that it holds any really vital gift.

Mr. Clapp appears to be somewhat at variance with the writer upon this question, as he has a great deal of faith in the possibilities of the proper use of nitrogen compounds; he may well be right; certainly more work will have to be done on the subject.

This last set of animals, the ones in NO_2 and air, naturally raise the question of the effect of the blast of air alone, as it is certainly a radical step forward on the lines of the so-called fresh air treatments, which we consider as being treatments limited to good surroundings and normal oxidation.

In order to meet this criticism of this section of the experiment, we place a set of curves on the bottom of the drawing from an experiment (the Air Blast Experiment) on the subject made, but not here published, as it is too far outside of the path we are following.

An examination of these two curves shows the surprising fact that the animals under the blast of air did not do as well as the check animals.

On folding chart facing page 272 we place CHART NO. 3—THE NITROGEN EXPERIMENT.

On this drawing we have placed the four animals that lived a year or more. The curve at the bottom is the natural animal that was in the air and NO_2 treatment.

The reader will please note that this is the only natural animal that lived a year. We leave its curve for his study; it certainly tells us to hesitate before casting the nitrogen problem completely aside.

The animal next above is an ⊕ under the combined treatment of NO_2 and the "ozone."

Please notice that of the four animals on this drawing three are ⊕ and at the same time we wish once more to call attention to the two upper animals, No. 2 and No. 4. These are *two of four* in their class, ⊕ animals in the regular treatment, and they outlived all others. The evidence in favor of our process is here overwhelming.

Important as these points are, we did not make this drawing to demonstrate them, but for a far more important purpose.

In the early portions of our work we drew the air through the ozonizers, thus stretching it slightly, while in our later work we forced it through, thus compressing it slightly; neither change was great, neither seemed material, but in September, 1913, it developed that since we had been forcing the air through the generators we had never had a case of tubercular healing, while before that time we had had many such cases.

We at once investigated the matter and found that our impression was correct and on September 15, 1913, commenced to draw the air through the generators, thus stretching the air molecules slightly before the electric current acted upon them.

This was at the thirtieth week and we ask that the top curve, animal No. 2, be studied closely, as we believe we have the truth at last.

The animal reached the apex of his weight at the twenty-fourth week and commenced to fall gradually.

On the thirtieth week the new form of oxygen commenced to act upon him. From then to the thirty-eighth week he fell to lower and lower points at the end of each rally; then the power seemed to get control and gradually the whole character of his weight curve changed and he rose, at first slowly and then strongly and persistently.

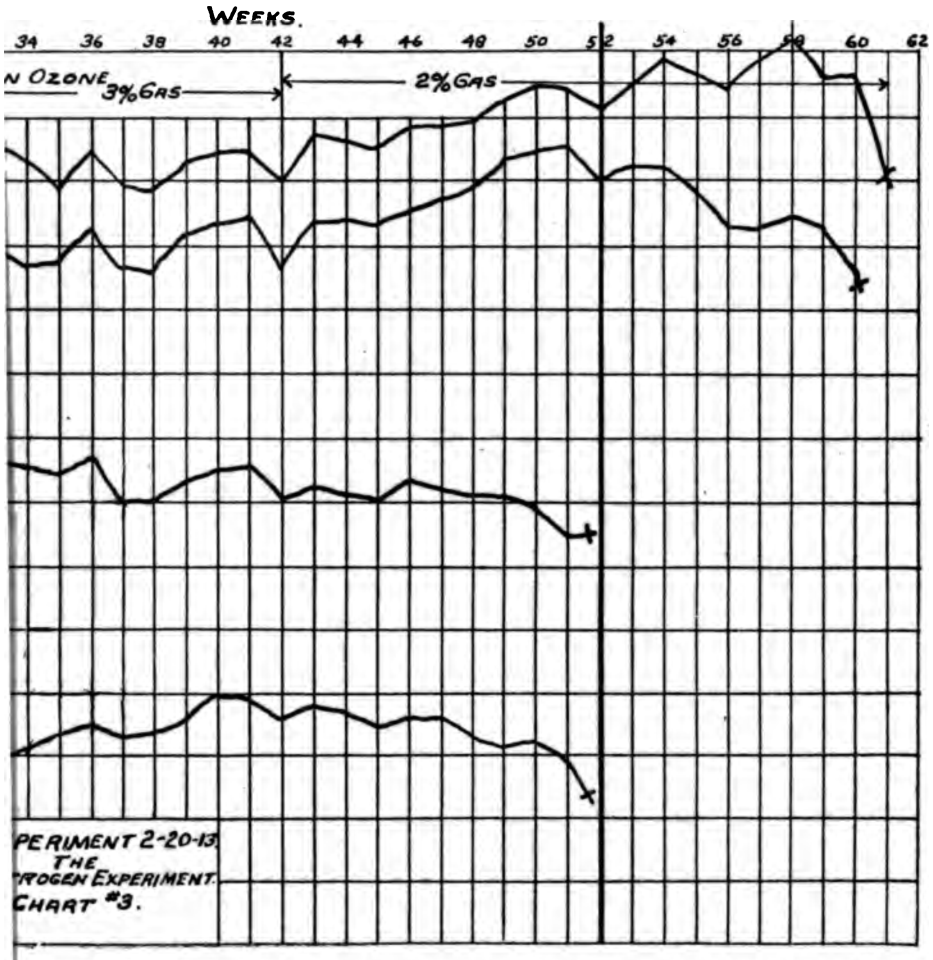
Applying the same close examination to his mate, No. 4, we find that the curves are almost identically the same.

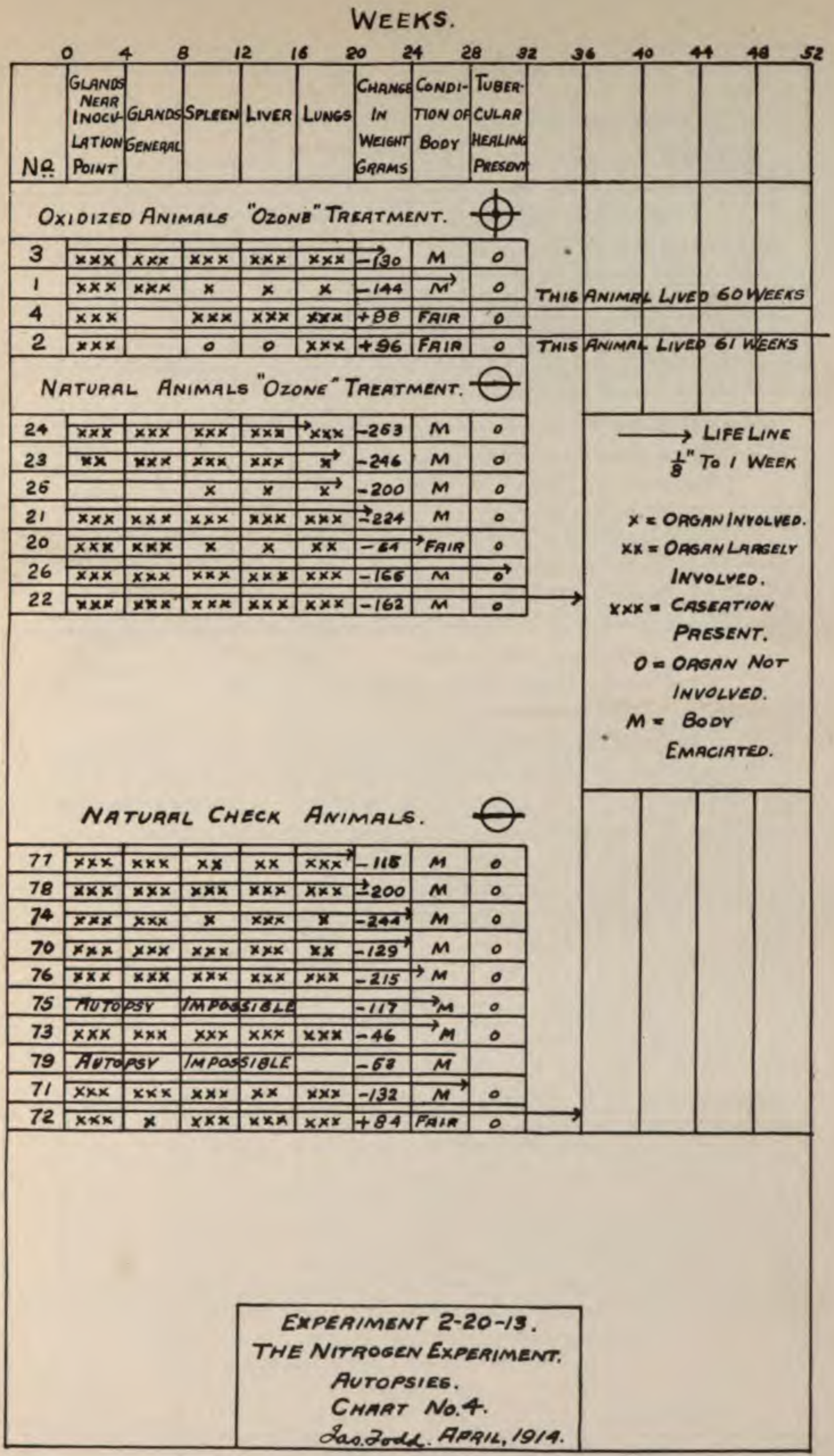
Looking now at the other two animals, No. 30 and No. 66, we see how their curves are devoid of the characteristics of the other two. One of these two latter animals is not under "ozone," and the other is under both NO_2 and "ozone," too heavy a load.

Here now is the clue we follow, as this is where we believe both truth and success lie, and we base our next experiment upon this reasoning, namely: a different form of oxygen made by a change in mechanical operation—*the air slightly compressed before ozonizing gives resistive oxygen, while if the air is slightly attenuated, it results in the formation of vital oxygen.* Here we believe is our problem; more of it shall be presented later in its proper place.

On pages 273 and 274 we place charts numbers 4 and 5, covering the autopsies of all the animals in the experiment.

The life lines will give the length of life of each. As to the autopsies, they are not under discussion at the present.


WEEKS.
34
36
38
40
42
44
46
48
50
52
54
56
58
60
62
N OZONE
3% GAS
2% GAS
PERIMENT 2-20-13
THE
ROGEN EXPERIMENT.
CHART #3.



No.	Glands Near Inoculation Point	Glands General	Spleen	Liver	Lungs	Change in Weight Grams	Condition of Body	Tubercular Healing Present
Oxidized Animals "Ozone" Treatment.								
3	xxx	xxx	xxx	xxx	xxx	−130	M	0
1	xxx	xxx	x	x	x	−144	M	0
4	xxx		xxx	xxx	xxx	+98	Fair	0
2	xxx		0	0	xxx	+96	Fair	0
Natural Animals "Ozone" Treatment.								
24	xxx	xxx	xxx	xxx	xxx	−263	M	0
23	xx	xxx	xxx	xxx	x	−246	M	0
26			x	x	x	−200	M	0
21	xxx	xxx	xxx	xxx	xxx	−224	M	0
20	xxx	xxx	x	x	xx	−64	Fair	0
26	xxx	xxx	xxx	xxx	xxx	−166	M	0
22	xxx	xxx	xxx	xxx	xxx	−162	M	0
Natural Check Animals.								
77	xxx	xxx	xx	xx	xxx	−115	M	0
78	xxx	xxx	xxx	xxx	xxx	−200	M	0
74	xxx	xxx	x	xxx	x	−244	M	0
70	xxx	xxx	xxx	xxx	xx	−129	M	0
76	xxx	xxx	xxx	xxx	xxx	−215	M	0
75	Autopsy		Impossible			−117	M	0
73	xxx	xxx	xxx	xxx	xxx	−46	M	0
79	Autopsy		Impossible			−68	M	
71	xxx	xxx	xxx	xx	xxx	−132	M	0
72	xxx	x	xxx	xxx	xxx	+84	Fair	0

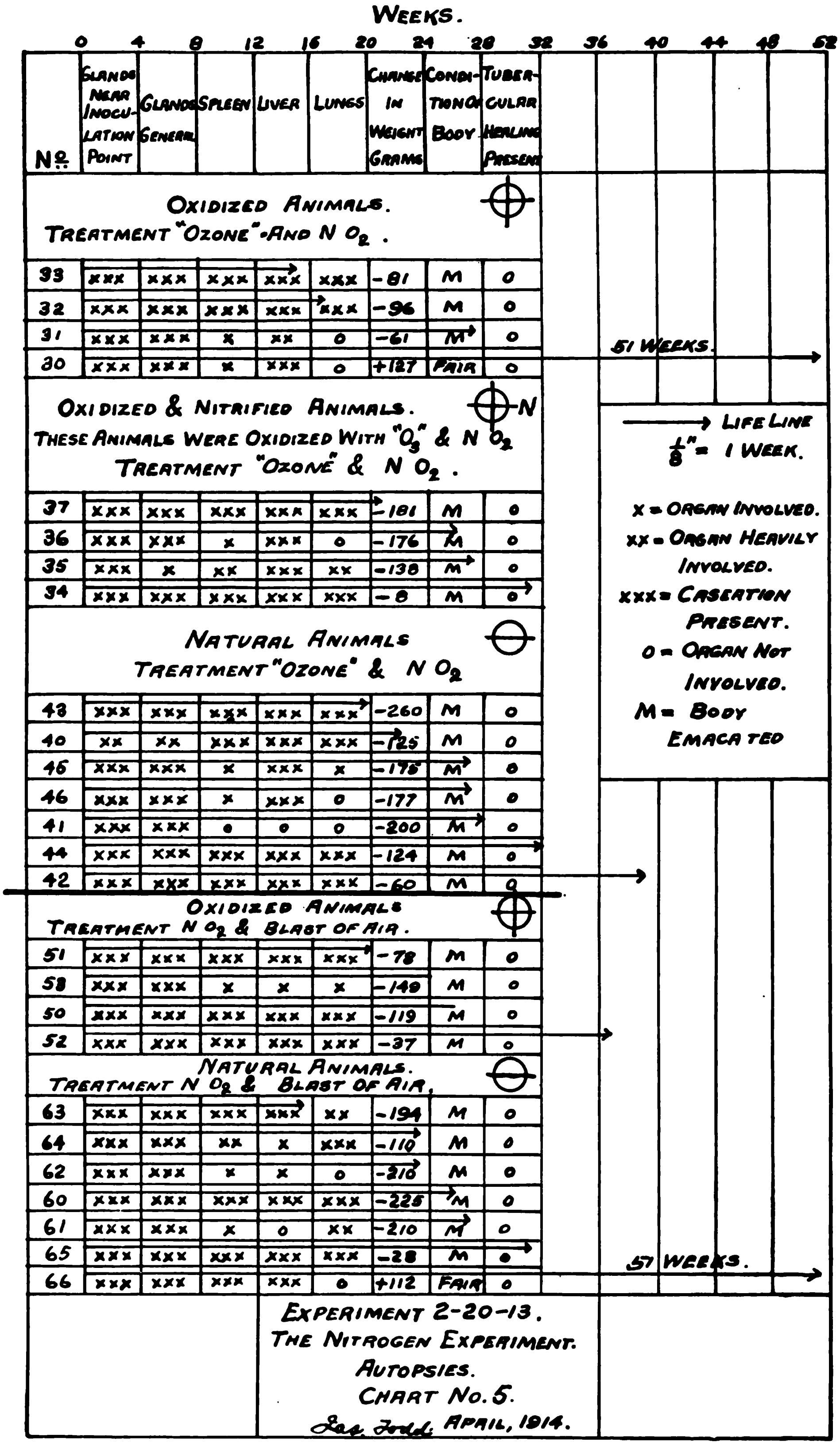
THIS ANIMAL LIVED 60 WEEKS

THIS ANIMAL LIVED 61 WEEKS

→ LIFE LINE
$\frac{1}{8}$" TO 1 WEEK

X = ORGAN INVOLVED.
XX = ORGAN LARGELY INVOLVED.
XXX = CASEATION PRESENT.
O = ORGAN NOT INVOLVED.
M = BODY EMACIATED.

EXPERIMENT 2-20-13.
THE NITROGEN EXPERIMENT.
AUTOPSIES.
CHART No. 4.
Jas. Todd. APRIL, 1914.



No.	Glands Near Inoculation Point	Glands General	Spleen	Liver	Lungs	Change in Weight Grams	Condition Body	Tubercular Healing Present

OXIDIZED ANIMALS.
TREATMENT "OZONE" AND NO_2.

No.	Glands Near Inoculation Point	Glands General	Spleen	Liver	Lungs	Change in Weight Grams	Condition Body	Tubercular Healing Present
33	xxx	xxx	xxx	xxx	xxx	-81	M	0
32	xxx	xxx	xxx	xxx	xxx	-96	M	0
31	xxx	xxx	x	xx	0	-61	M	0
30	xxx	xxx	x	xxx	0	+127	FAIR	0

OXIDIZED & NITRIFIED ANIMALS.
THESE ANIMALS WERE OXIDIZED WITH "O_3" & NO_2
TREATMENT "OZONE" & NO_2.

No.	Glands Near Inoculation Point	Glands General	Spleen	Liver	Lungs	Change in Weight Grams	Condition Body	Tubercular Healing Present
37	xxx	xxx	xxx	xxx	xxx	-181	M	0
36	xxx	xxx	x	xxx	0	-176	M	0
35	xxx	x	xx	xxx	xx	-138	M	0
34	xxx	xxx	xxx	xxx	xxx	-8	M	0

NATURAL ANIMALS
TREATMENT "OZONE" & NO_2

No.	Glands Near Inoculation Point	Glands General	Spleen	Liver	Lungs	Change in Weight Grams	Condition Body	Tubercular Healing Present
43	xxx	xxx	xxx	xxx	xxx	-260	M	0
40	xx	xx	xxx	xxx	xxx	-125	M	0
45	xxx	xxx	x	xxx	x	-175	M	0
46	xxx	xxx	x	xxx	0	-177	M	0
41	xxx	xxx	0	0	0	-200	M	0
44	xxx	xxx	xxx	xxx	xxx	-124	M	0
42	xxx	xxx	xxx	xxx	xxx	-60	M	0

OXIDIZED ANIMALS
TREATMENT NO_2 & BLAST OF AIR.

No.	Glands Near Inoculation Point	Glands General	Spleen	Liver	Lungs	Change in Weight Grams	Condition Body	Tubercular Healing Present
51	xxx	xxx	xxx	xxx	xxx	-78	M	0
53	xxx	xxx	x	x	x	-149	M	0
50	xxx	xxx	xxx	xxx	xxx	-119	M	0
52	xxx	xxx	xxx	xxx	xxx	-37	M	0

NATURAL ANIMALS.
TREATMENT NO_2 & BLAST OF AIR.

No.	Glands Near Inoculation Point	Glands General	Spleen	Liver	Lungs	Change in Weight Grams	Condition Body	Tubercular Healing Present
63	xxx	xxx	xxx	xxx	xx	-194	M	0
64	xxx	xxx	xx	x	xxx	-110	M	0
62	xxx	xxx	x	x	0	-210	M	0
60	xxx	xxx	xxx	xxx	xxx	-225	M	0
61	xxx	xxx	x	0	xx	-210	M	0
65	xxx	xxx	xxx	xxx	xxx	-28	M	0
66	xxx	xxx	xxx	xxx	0	+112	FAIR	0

⟶ LIFE LINE
$\frac{1}{8}$" = 1 WEEK.

X = ORGAN INVOLVED.
XX = ORGAN HEAVILY INVOLVED.
XXX = CASEATION PRESENT.
0 = ORGAN NOT INVOLVED.
M = BODY EMACIATED

EXPERIMENT 2-20-13.
THE NITROGEN EXPERIMENT.
AUTOPSIES.
CHART NO. 5.
Jas. Todd. APRIL, 1914.

10 ⊕ Animals
#1 To #10
Under Treatment.

10 ⊖ Animals.
#20 To #29.
Under Treatment.

10 ⊖ Animals.
#30 To #39.
Check Animals.

Experiment 3-12-14.

The Plan Of The Experiment.

The Experiment Is Based On Certain Specified Mechanical Operations.

30 Male Guinea Pigs Divided Into Three Sections.

Object Of The Experiment To Test Certain Mechanical Operations As Affecting The Gas So Produced.

"C" Inoculation (25 Million Germs).
Mixed Germs From Two Human Sources.
Treatment, 3% "Ozone" For 2 Weeks, Then 2%
The ⊕ Animals Have Their Preliminary Oxidation Under Gas Made Under The Same Conditions As That Used Throughout This Experiment.

Mechanical Operation.

Glass Insulation. 100-102 Volts On Dynamo
6600 To 6732 Volts On "Ozone" Generators.
Air To Be Drawn Through The "Ozonizers".
Air To Be Reduced To Minimum Practical Quantity, About 26 Cu.Ft. Per Minute To Each Cell.

Jas. Todd Jan'y. 1914.

EXPERIMENT 3-12-14

THE MARCH EXPERIMENT

On page 275 we place the plan of this experiment.

The plan is a very simple one, covering three sets of ten animals each, one set oxidized for ten weeks with the same type of gas as used after inoculation, the two other sets being natural animals, one set passing through the treatment with the ⊕ ones and the other set used as natural check animals.

The machinery operations upon which we based the experiment were the use of full voltage on glass plates and the drawing of the air through the generators, thus attenuating it slightly before acting upon it with the electric current; this, instead of the slight compression of the air, being the essential of the plan.

On page 278 we place CHART NO. 2—EXPERIMENT 3–12–14.

On the left section of the drawing is the average weight changes of the ten ⊕ animals during their oxidation, the "oxidation dip" is very apparent between the sixth and seventh week.

We next come to the inoculation on March 12, 1914.

It will be noticed that the plan calls for ten animals in each section and that there are only five to each section on this drawing. The reason for this requires digression for the purpose of explanation and the explanation involves the reason why we failed to attain a decisive result.

The writer was away at the time of the inoculation and did not return until the first month had passed.

When he returned Doctor Riddle reported the work as progressing in exact accordance with the plan except that he was having a great deal of trouble in making the gas strong enough.

We at once started to investigate the trouble and found the following state of affairs:

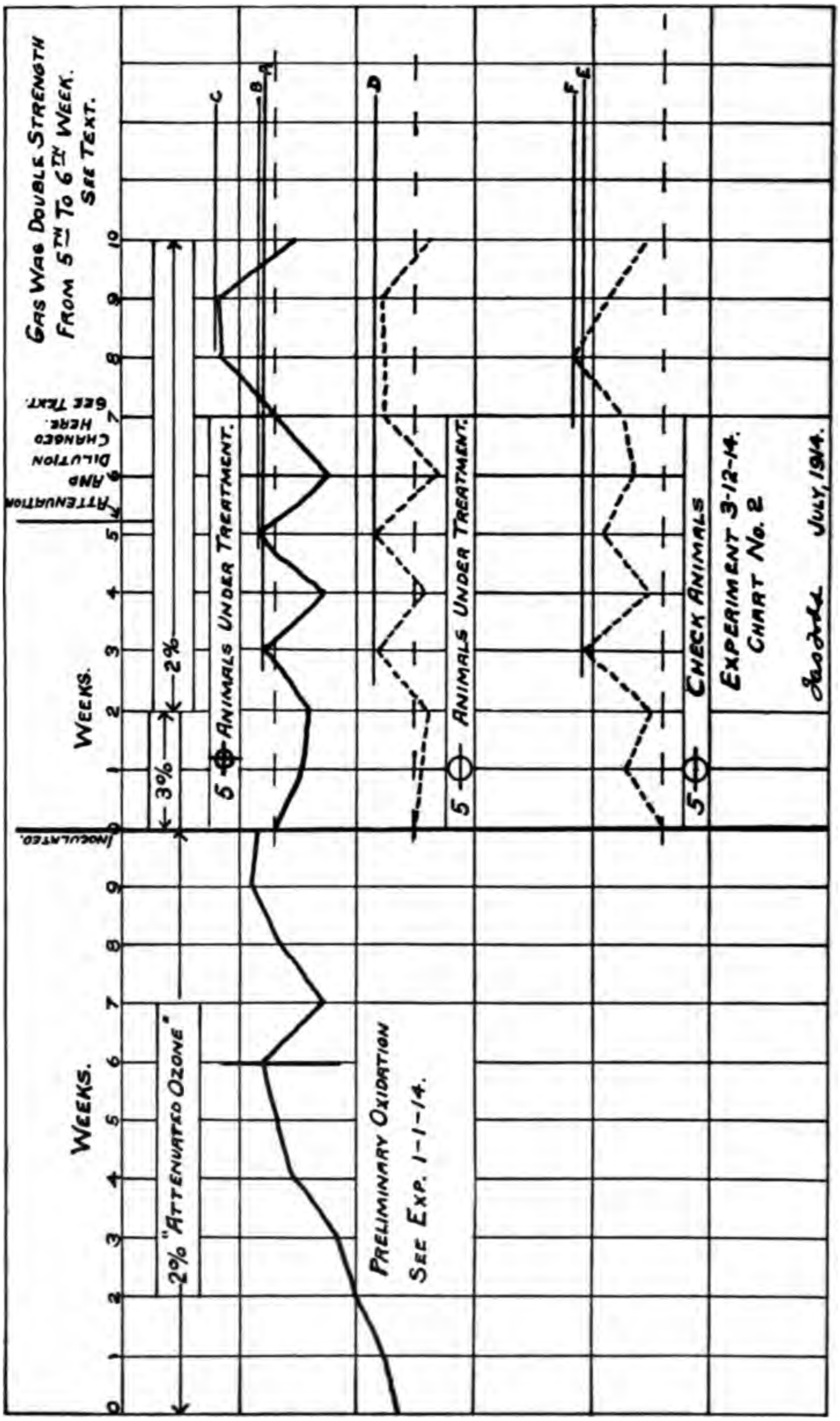
We had, ever since the latter part of the First May Experiment (EXPERIMENT 5–4–11), been using solid, well-constructed "ozone" generators of our own design through which we had forced the air. When we changed the plan and commenced to draw the air we had to return to the original generators used in the earlier experiments. These were of very poor design and construction, being of very light cast iron and not machined where they were fitted together. We found a very heavy leakage of air being drawn into the casing just above the generating cells which diluted the gas, and we immediately dismantled the generators and reset them in a perfectly tight, riveted, steel casing that we had had made some time before with the idea of water-cooling the generators.

The strength of the gas doubled as soon as the tight casing was set in place, thus showing that the dilution by leakage had amounted to about fifty per cent.

This question of leakage at once assumes great importance as a possible factor in our problem and so must be explicitly dealt with here, because of the fact that these leaky generators were the ones used during the first two experiments, EXPERIMENT 1–14–10 and EXPERIMENT 8–4–10, the January and the August Experiments.

When one stops to consider every possible factor in this mystery, he must allow that this accidental finding is full of possible significance, because the effect of mixing our "ozonized" air, at the very moment of its formation, with practically an equal volume of pure air would bring about two well-defined methods of changing chemical activity.

In the first place the ozonized air would be cooled by the fresh air immediately after it left the heat of the electrical discharge, which caused its formation into extra active gases. This cooling would tend to stop further changes, because heat is the great exciter of chemical activity and would therefore tend to help us deliver to


Weeks.
0
1
2
3
4
5
6
7
8
9
2% "Attenuated Ozone"
Preliminary Oxidation
See Exp. 1-1-14.
Inoculated.
Weeks.
0
1
2
3
4
5
6
7
8
9
10
3%
2%
Attenuation and Dilution Changed Here. See Text.
Gas Was Double Strength From 5th To 6th Week. See Text.
5 Animals Under Treatment.
C
B
A
D
5 Animals Under Treatment.
F
E
5 Check Animals
Experiment 3-12-14.
Chart No. 2
July, 1914.

our animals a very fragile form of the gas, which, if not cooled, might well take other forms not so useful to our work. The fact of the dilution by the air leaking into the generators could well bring about a like result by changing concentration. Undoubtedly in dealing with the questions arising in the future development of the work, this question, based on accidental leakage, must be closely investigated.

In this respect it is proper for the writer to say that he has believed for a long time that when we finally discover the form of oxygen best suited to our work, we shall find it to be an exceedingly fragile gas, as he can only conceive of a fragile, and consequently intensely oxidizing, form as being capable of actually taking a dominating part in the chemistry of life when injected into that sphere by man's plan, rather than by nature's operations.

The one thing that has disheartened us more than anything else in this whole work has been the inadequate facilities at our disposal which have forced us at all times to gamble with the result instead of being able to deliberately press the question to a conclusion.

In the Nitrogen Experiment, we had to guess at the result because we had neither time nor facilities for determining the correct quantity of peroxide of nitrogen to use; such has been the case from the beginning, and in this experiment we have had to take chances on the proper attenuation of the air before "ozonizing" it.

To have done even scant justice to our work we should have had sufficient machinery to have explored inch by inch the way from twenty water inches of vacuum to twenty water inches of pressure, and the number of animals necessary to carry in each section, but we had but one set of machinery and were therefore limited to its use in endeavoring to solve a problem that means so much.

We have said all this in candid explanation of the causes that have apparently led to the vital injury of the experiment in a seemingly reasonable step taken only after careful consideration.

The plan of the experiment had not called for any particular tension of the air; the actual operation of the machinery was showing about one fourth of a water inch of tension to the air; this was very slight and indefinite and at the time we changed from the leaky generator casing, we discussed the matter and decided to raise this to one inch as being the lightest, definite back pressure we could carry. From the sixth week on we operated under this new condition.

In addition to this, for five days we did not change our distributors, to compensate for the double strength of gas we were making, made double strength by removing the leakage of air into the generators, as we seemed to have overlooked this entirely.

On turning to the life lines on the autopsy charts (page 284) it will be seen that our animals died very rapidly. We could not alter conditions, for it was too late. Moreover we considered it wise to let the experiment stand as demonstrating the fact that we had fallen into a position requiring great care, for it was proving that we could make a gas that was so active as to be fatal. In other words, we had apparently stumbled upon a form of oxygen that was so active as to be dangerous to life.

In this connection we think that the trend of the work shows that we must operate very close to normal pressures; the true point will be very close to zero, so close as to make the altitude of a district in which we may wish to instal a plant, a vital question. We are now operating at about eight hundred feet above sea level.

This long explanation has been made necessary by the one thing that we are deliberately reiterating, over and over again in the hope that the world will correct it for its own good—namely, lack of facilities.

To return now to our drawing (page 278) with its five animals to a section, instead of ten animals as called for by the plan.

We chose the five best animals in each section and based our curves on these.

There is one very remarkable characteristic shown by these curves and we wish to dwell on it at length, because it seems to mean that we are here very close to success; in fact and in reason, it can mean nothing else.

In turning back and taking up the study of that primary foundation of the work, the previously oxidized or ⌖ animals, it will be found that in the first two experiments (EXPERIMENT 1–14–10 and EXPERIMENT 8–4–10) the ⌖ animals fell, that is lost weight, immediately after the inoculation. This is clearly demonstrated in CHART NO. 3—EXPERIMENT 8–4–10, page 161, where the different quantities of gas were being investigated. It should be borne in mind that the ⌖ animals there carried in one per cent. of gas had been, just previous to inoculation, carried in two per cent., which will account for their slight rise in weight during the early stages of the experiment, as the gas strain was lightened on these.

Now, passing by the November Experiment for the reason that it carries no properly oxidized animals, and turning to the various drawings of the oxidized animals passing through the process in the First May Experiment, EXPERIMENT 5–4–11 (CHART NO. 6 on page 194 will well demonstrate the point, although it is apparent in all the charts of the oxidized animals), it will be seen that all these animals rose strongly in weight immediately after inoculation.

In the first two experiments we were drawing the air through the generators and operating at full voltage. In the May Experiment we were still drawing the air, but were down ten per cent. in voltage, due to insulation troubles.

On looking now at the Nitrogen Experiment, CHART NO. 2, on page 265, it will be seen that the oxidized animals in the upper pair of curves, the animals under the regular process, increase in weight after inoculation. Here we compressed the air and carried full voltage.

With the fact firmly impressed upon our minds that during the first two experiments, when our machinery operations were nearly, if not quite, identical with the operations in this experiment up to the time when we changed the leaky generator; that the oxidized animals in the first two experiments lost weight immediately after inoculation and later (in the First May and the Nitrogen Experiments) when we had radically changed our machinery operations, they rose in weight immediately after inoculation, we will turn back to our drawing on page 278.

The check animals, not in any way under the influence of the process, rise after the inoculation. The natural animals under the process fall *slightly* after the inoculation.

The oxidized animals, ⌖, fall heavily after the inoculation.

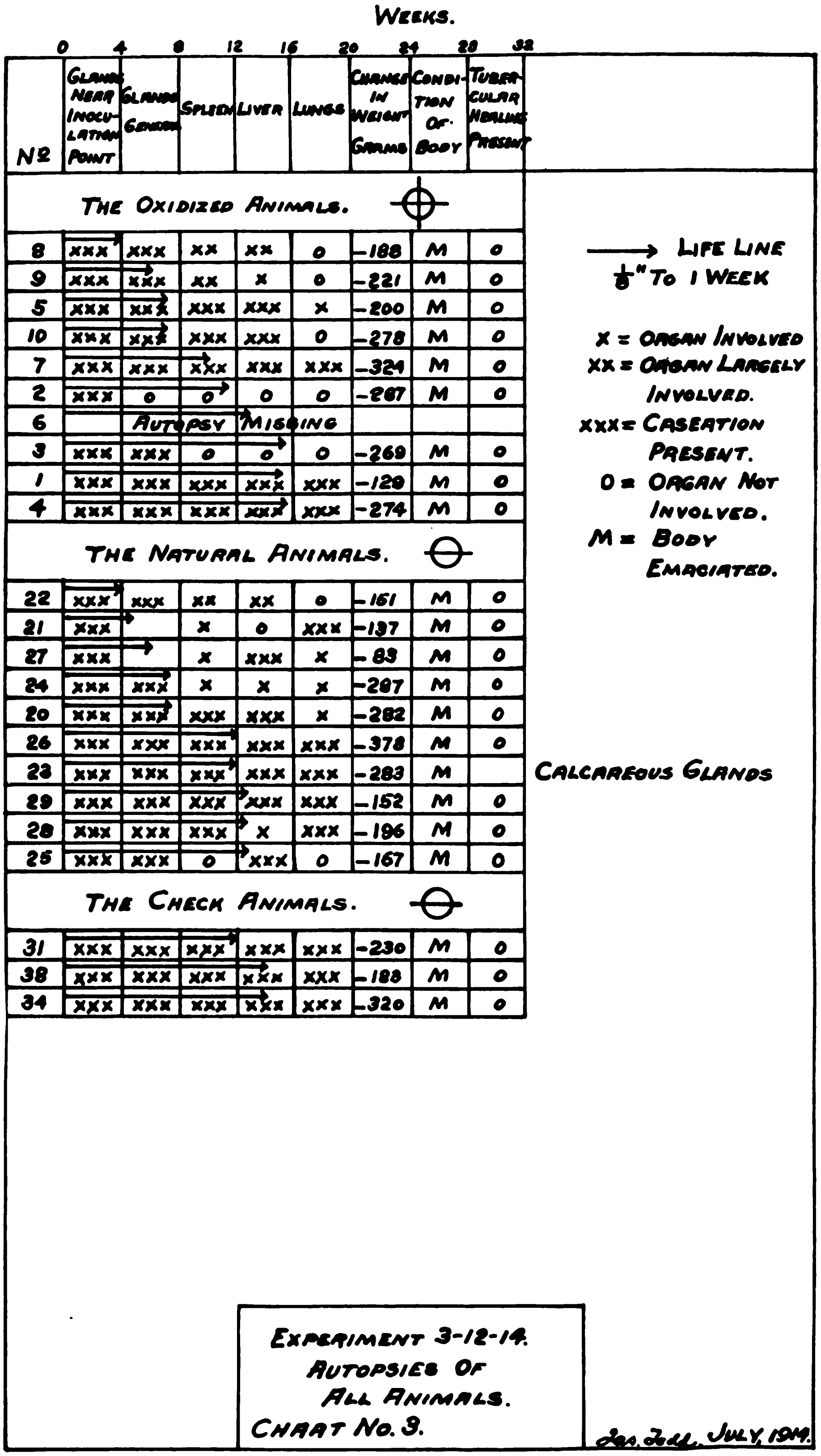
Thus we pass by gradations from the check animals to the oxidized ones and we find the mark that cannot be mistaken—the falling weight curve just after inoculation, *the character of a weight curve.*

There have been different forms of oxygen used in the different experiments and those that were successful in the first two experiments caused the ⌖ animals to lose weight immediately after their inoculation, while those that were not so successful (as in the ⌖ animals in the First May Experiment and the Nitrogen Experiment) caused a gain in weight immediately after inoculation while in this experiment the ⌖ lose weight immediately after inoculation and so seem to prove that our problem is close to solution.

There is no other explanation that is tenable to one's reason; and our experiment, instead of being a failure, is on the very verge of success, only the position is very vital and we must be careful, for a little too much tension to the air may mean death.

The rest of the drawing, as well as the autopsies on page 284, is left for consideration without comment, except that in the case of the autopsies we would draw attention to the fact that quite a number of the animals under the treatment either were not attacked in the spleen and liver or only slightly so, while the check animals were strongly tubercular throughout.

When we abandoned the experiment, we did not have autopsies performed on the remaining check animals.



Weeks.

0 4 8 12 16 20 24 28 32

Nº	Glands Near Inoculation Point	Glands General	Spleen	Liver	Lungs	Change in Weight Grams	Condition of Body	Tubercular Healing Present
The Oxidized Animals. ⊕								
8	xxx	xxx	xx	xx	o	-188	M	o
9	xxx	xxx	xx	x	o	-221	M	o
5	xxx	xxx	xxx	xxx	x	-200	M	o
10	xxx	xxx	xxx	xxx	0	-278	M	o
7	xxx	xxx	xxx	xxx	xxx	-324	M	o
2	xxx	o	o	o	o	-287	M	o
6		Autopsy Missing						
3	xxx	xxx	o	o	o	-269	M	o
1	xxx	xxx	xxx	xxx	xxx	-129	M	o
4	xxx	xxx	xxx	xxx	xxx	-274	M	o
The Natural Animals. ⊖								
22	xxx	xxx	xx	xx	o	-161	M	o
21	xxx		x	o	xxx	-137	M	o
27	xxx		x	xxx	x	-83	M	o
24	xxx	xxx	x	x	x	-287	M	o
20	xxx	xxx	xxx	xxx	x	-282	M	o
26	xxx	xxx	xxx	xxx	xxx	-378	M	o
23	xxx	xxx	xxx	xxx	xxx	-283	M	
29	xxx	xxx	xxx	xxx	xxx	-152	M	o
28	xxx	xxx	xxx	x	xxx	-196	M	o
25	xxx	xxx	o	xxx	o	-167	M	o
The Check Animals. ⊖								
31	xxx	xxx	xxx	xxx	xxx	-230	M	o
38	xxx	xxx	xxx	xxx	xxx	-188	M	o
34	xxx	xxx	xxx	xxx	xxx	-320	M	o

Calcareous Glands

⟶ Life Line
⅛" To 1 Week

x = Organ Involved
xx = Organ Largely Involved.
xxx = Caseation Present.
0 = Organ Not Involved.
M = Body Emaciated.

Experiment 3-12-14.
Autopsies Of
All Animals.
Chart No. 3.

Jas. Todd, July, 1914.

THE PRINCIPLES INVOLVED IN THE PROCESS

We have said that we would show that there is but one line of reasoning which can be applied to this work as a whole and be satisfying. Until we have the true reasoning, we are almost hopelessly involved in prejudice and ignorance, so it becomes vital that we put ourselves in a position to think correctly on the subject of our process.

The weight of this work is bound in the end to bring out the true reasoning, providing it has been, on the whole, well designed and carefully carried out. It must bring about this result by showing, step by step, the fallacy of a wrong reasoning, as well as bringing out, step by step, the true reasoning. We have at hand nearly six years of work and six main experiments, as well as much additional information of value, and if there is a trend to our experiments we should surely be able to locate it by now.

When we started this work, we did so because we saw oxygen in such complete control of our bodies as to show that nature relied upon it to a wonderful extent in her work. Very tersely stated, we saw oxygen entering our bodies through both our food and our lungs. We saw a major organ of the body, the lungs, given up to the introduction of oxygen into our blood and the removing of the results of its introduction; in addition to this we saw every other element, when its power had been consumed by the body, removed by being combined with oxygen. All this led us to believe that if we could control the introduction of this element into our bodies, we would of necessity, be able to play upon our condition much as a violinist may play upon his instrument.

Even at the start we fully recognized that we must overcome normality; that to accomplish our purpose, either the body or the element must be intensified, and so we chose so-called ozone as the most practical form of intensified oxygen. Undoubtedly by a rare chance we operated our machinery correctly during the first two experiments, although we then had no idea of anything deeper than "ozone" being involved in the process. Then, just as surely as our machinery commenced to operate in new paths, we drifted away from what had appeared sure ground and the first thing we knew we had no anchor and no reasoning that brought results, but gradually, although very dimly at first, we commenced to grope and then to see, and that which has become so clear to us we wish to impress upon our reader. It is a strange story, however, because it is entirely new—*that oxygen can and does take many different forms*, that some of these various forms can aid us little if any (see the November Experiment); that others can aid us a good deal (see the First May Experiment); and that there are yet others that can almost remove the terror of disease and suffering from the human race (see the January Experiment).

The proof of this state of affairs is perhaps best stated by negation; by the statement that any other line of reasoning that we have ever seen applied to the work *becomes untenable before the facts of the work*, which are fortunately sufficient for this purpose.

For instance, take the position that peroxide of nitrogen is the vital principle and one meets the proof that all the wonderful success of the First May Experiment was attained with no nitrogen compounds present, yet tubercular healing was present in this experiment and seventy-two weeks of life after inoculation.

Go farther and say, as we have heard it said, that the oxidizing gases have nothing to do with the results and that the benefits are entirely due to the large quantity of fresh air driven in on the animals and we are met by the facts of the "Air Blast" experiment, where this question was investigated and where the animals placed under a blast of pure air died more rapidly than the check animals; and if we follow such reasoning past this obstacle, we will find, possibly to our surprise, that we are stopped by the whole of the facts developed by the work on nutritive oxidation, and still further on we meet the ⌖ animals and then we are overwhelmed.

But it is not for us to undertake to meet every possible criticism of our work before it is made, but rather to state that if it is undertaken to explain these experiments by any other line of reasoning than the varying forms of oxygen, we soon run aground; our reason is not satisfied, things do not do what they seemingly ought to do, while from the moment we assume that oxygen is "acting" as we say, everything becomes clear and one feels that he is on firm ground, although there is still much truth to be discovered.

As to clear evidence of what we claim; there is some of that too. For instance, why do the weight curves of the previously oxidized animals in the first two experiments all fall just after inoculation, while the lines of the First May and the Nitrogen Experiments rise after inoculation, and then, when we return to the original mechanical operations in the last experiment, the lines again fall, *if we were not making a different form of oxygen at the first and the last from that used in the intermediate experiments?*

These facts cannot be overlooked as they are real evidence and demonstrate a point to which we have frequently referred; the character of a weight curve rather than its detailed changes.

There has been a good deal of discussion as to what this process, with its clear marks of radicalism, means in its operations within the living body. Of course the writer can give no information on this point, as he is not trained to enter the living body and is well content to stand and study it by its external evidences, but Doctor Todd has given an explanation that is at least clear and simple and one which appeals as only a reasonable explanation can.

He considers it a process of elimination in the sense that when active oxygen enters into the living processes they move more rapidly and unerringly and so, by eliminating the spent elements, make room for the following ones to act; much perhaps as when we open the damper on a boiler chimney, the burnt gases are carried away to be replaced by fresh heat, the steam pressure rises, but no injury is done, as we are acting well within the factor of safety.

THE FINAL TEST

This book was originally written to be published as an effort to obtain the resources necessary to carry on a comprehensive line of experiments looking to the solution of the problems we have placed before you.

Just before its publication we decided to completely change our plan and to publish it first for private circulation, utilizing it solely for the purpose of obtaining a large number of cases of disease in human beings that we might add their records to our work at the time of final publication.

The change in our original plan has been brought about by the careful consideration of many questions, two of which are necessary to the reader's understanding of the situation.

The work which we have been doing with the oxidized oils has been gradually assuming an importance that we hardly hoped to attain at this stage.

Besides perfecting the making of these oils, we have been able to add to the original oxidized olive oil an entirely new development in the oxidized cod liver oil and have been able to raise the quantity of available oxygen in both to almost double the amount we originally attained, and by a careful study of the questions involved in their oxidation have materially increased their digestibility.

The coincident effect of the increase in the quantity of available oxygen in the oils added to the larger quantity we can use at a dose has gone far towards convincing us that we can establish ourselves so strongly, at least in demonstrating resistance to certain diseases, as to make the value of our process unquestionable.

There are many important questions raised by these experiments but standing out above all the rest there is one that must be faced, one which we may not flinch from and one which our reader has the right to expect us to prove by every reasonable means at our disposal.

When we stated that we would by proper oxidation so raise the vital forces of the living body as to cause that body to react to its maximal advantage upon the disease or condition attacking it, we did not limit ourselves to any one disease.

We did not say we had a cure-all, but we did say the application was broad.

This proposition is diametrically opposed to the modern idea of medicine. We have stated it and we have proved it to our own satisfaction and our conception of our duty requires us to assert it.

We are fully aware that we choose between two paths: the one easy, the other hard and lined with opposition. If we were to ask the world to come and see us cure tuberculosis with ozone, they would come, but some of them would have Bright's disease and die because we were afraid to speak that which we knew to be the truth.

We must not lose the broad application of the treatment and we must not confuse the evidence as to the [illegible] of the element.

It is of the greatest importance that all evidence that can be brought to bear upon these questions should be systematically collected in one center and to this end this [illegible] intends to [illegible] of the results of these remedies.

We will [illegible] and we shall [illegible] which [illegible] cases of different diseases [illegible] early cases of tuberculosis and Bright's [illegible] cases that [illegible] be [illegible] See Note.

[illegible] we would state that [illegible] now taking any new cases. [illegible] —J. T.

If you aid us, as you now can do, it is not unlikely that you will take part in the successful development of the oxidation of the living body and thereby make possible a new method of fighting disease.

As we have not argued about our drawings, we will not argue about human nature, but simply leave it to your individual decision.

At your request we will supply you with our rules and do everything we can to aid you.

NOTE.—Circumstances seem to make it obligatory upon us at this time to base our future operations upon the use of the oxidized oils on human beings.

While taking this course in full confidence we yet regret the necessity of even temporarily abandoning the problem of the different forms of oxygen, for in this direction must eventually lie the future of these very important questions.

THE CHEMICAL AND MECHANICAL SECTION

PREFACE

Add to the work we have done on tuberculosis the further task of paying attention to one's daily occupation and it becomes apparent that we have had far too little time to give to the study of so-called "ozone." Long intervals have passed in which we could do nothing, so that we reach this portion of our work inadequately prepared to meet the situation.

To our mind this problem of ozone is one of the greatest mysteries of modern chemistry and unfortunately the work that we have been able to do is mainly destructive, for the problem is such that it is necessary first to remove the errors with which it is burdened before we can hope to solve it. However, there is no reason, with the errors removed, why the problem should not give way to intelligent work.

This section is mainly for the purpose of supplying the necessary data to enable others to reproduce our work and should not be construed as an attempt to force our views upon others.

THE OZONE THEORY

The writer has designed an apparatus and operated it many times, both with air and with pure oxygen, which enables us to make gas analyses in such a way as to eliminate all calculations such as barometric pressure, temperature and humidity. By means of this apparatus we both made and destroyed so-called ozone within sealed vessels but we were never, at any time, able to obtain any contraction during its formation, or expansion during its destruction.

Our sole reason for not attacking the theory of ozone formation is that we do not feel that our work calls for its removal. If oxygen is capable of taking many different intensified forms, one of them may be in accord with the ozone theory and we not have made that particular form when investigating the matter. If oxygen can and does take different intensified forms, there can be no so-called ozone theory such as is now accepted for the very fact that there is more than one form destroys the ozone theory because that theory claims to account for the whole phenomenon by means of one form of the element.

We believe that the only reasonable explanation of our experiments is that oxygen *can* and *does* take many different forms or activities and either our view or the ozone theory must give way because they are incompatible with each other in so far as the ozone theory is based upon O_3 being the only intensified form of the element.

THE DIFFERENCE BETWEEN SO-CALLED OZONE AND OXIDES OF NITROGEN

The first obstacle that was met when we determined to undertake this work was that there was no known way of distinguishing between oxides of nitrogen and so-called ozone, all prior efforts to differentiate between the two sets of gases having failed.

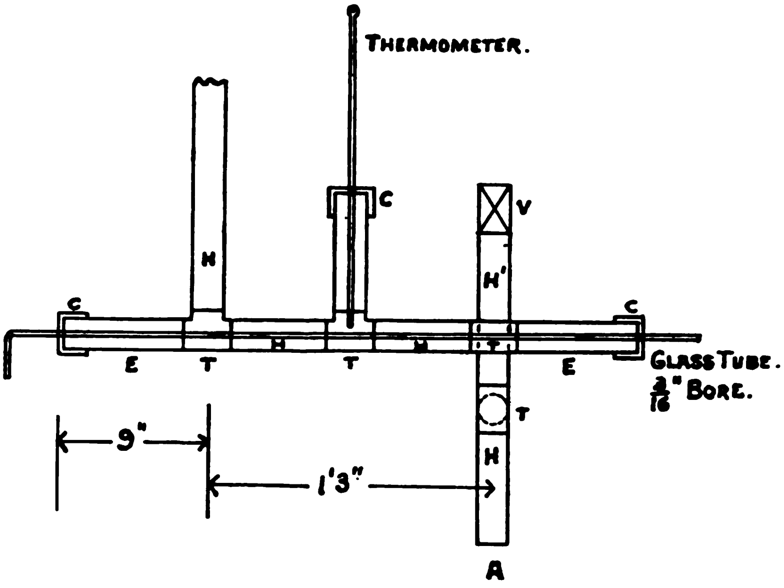
To give the animals peroxide of nitrogen fumes, which would quickly result from the presence of the oxides of nitrogen as they would build upwards from the lowest oxide form to NO_2, might prove fatal and so must either be evaded or clearly known and planned for.

With this condition before us it became of paramount importance to be able to determine the difference between the two classes of gases in order to know which one was being made by our generators. Eventually we found the distinction in the fact that so-called ozone is instantly destroyed when heated to 310° Centigrade while the oxides of nitrogen will stand a much higher temperature, 400° Centigrade having no effect on even traces of the oxides of nitrogen.

On page 295 is a drawing of the apparatus we use for continuous testing for the presence of oxides of nitrogen.

The apparatus is made of two-inch pipe and fittings as shown in the drawing and all that portion through which the heat passes (marked *H*), as well as the branch for the thermometer, must be covered at least two inches thick with asbestos pipe covering to prevent heat radiation.

The apparatus consists of the necessary two-inch pipe, four tees, marked *T*, three caps, marked *C*, and one two-inch valve, marked *V*.



APPARATUS
FOR DISTINGUISHING
SO CALLED OZONE FROM
OXIDES OF NITROGEN.
Jas. Dodd. SEPT. 1911.

A lighted bunsen burner is placed at *A*, the heat from which passes through the path marked *H* and is registered on the thermometer. Should the heat rise too much, either turn the burner down or open the valve which is connected with a pipe near the top of the flame and which will conduct the heat through a different path (*H'*) from that occupied by the glass tube.

Immerse the bent end of the glass tube in a small bottle containing iodide of potassium and starch solution. The gas passing slowly through the glass tube is heated to the temperature shown by the thermometer (400° C.), all so-called ozone is destroyed at 310° C.; if no nitric oxides or acid are present no color is imparted to the testing solution, while if they are present the color is in direct proportion to the quantity.

Of late we have been using, instead of this apparatus, a capillary platinum tube, coiled and heated red hot, as we have found that the oxides of nitrogen, even in minute traces, are stable even at a red heat.

This test is wonderfully delicate, we being able to clearly detect peroxide of nitrogen when present only to the extent of one part in one hundred thousand.

THE EFFECT OF MAGNETISM ON OZONIZED AIR

Under this title we place a drawing on page 298.

The following description records one of the real mysteries of this work—the experiments that we cannot now repeat.

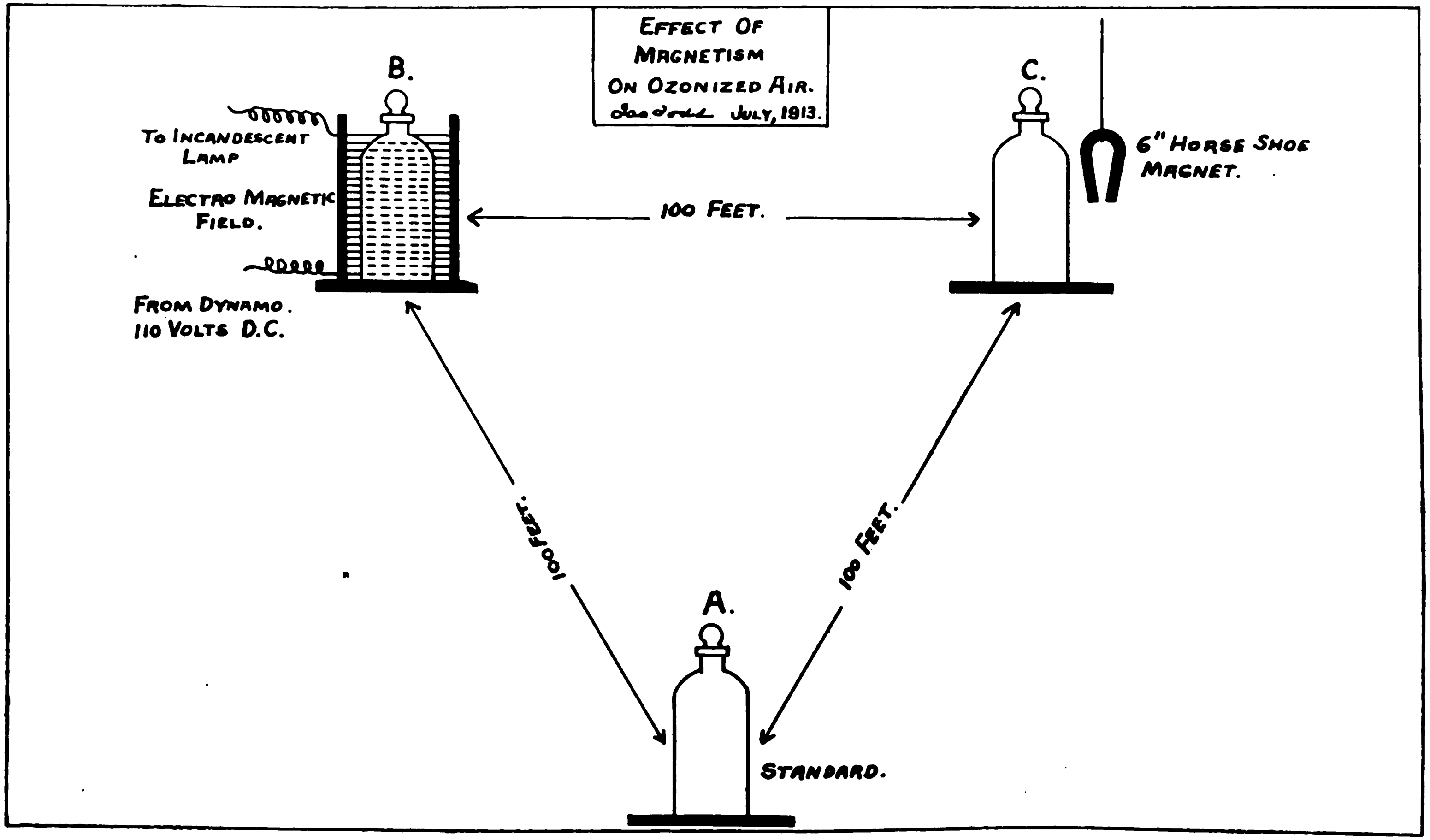
Three bottles marked *A*, *B*, *C*, capacity about 2,500 c.c., are attached by glass pipe lines to the pipes containing the ozonized air. The ozonized air is passed first through cotton to cleanse it thoroughly, then through three successive washings in concentrated C. P. sulphuric acid to dry it, then through the bottles which are placed in tandem. By means of the proper arrangement of the glass tubes the gas passes through a tube to the bottom of the bottle, then leaves the bottle through a tube near the top.

The gas is allowed to rush through these bottles for one half hour so that there shall be no question of their containing anything but identically the same quality of the ozonized air. They are now taken away and glass stoppers inserted.

These bottles are then placed in three different positions as shown by the drawing. At the end of three hours they are opened and a measured quantity of iodide of potash and starch solution poured into each.

The standard, bottle *A*, and the one placed in the electro-magnetic field, bottle *B*, both show the presence of the ozonized air unchanged by turning the testing solution as deep a blue as the same quantity of the fresh gas would do.

Bottle *C*, which has had an ordinary six-inch horseshoe magnet hung close to, but not touching it, fails to change the testing solution, thus proving that no so-called ozone remains in it.



EFFECT OF MAGNETISM ON OZONIZED AIR.
Jas. Dodd JULY, 1913.

A number of further experiments seemed to indicate that the position of the magnet with regard to the axis of the earth had a distinct influence upon the reaction. When the bottle was placed south of the magnet the reaction seemed to be more rapid.

We constructed a large iron magnet operated by a dynamo and capable of lifting three hundred pounds. It destroyed the gas but not more rapidly than the small one.

These experiments were made a great number of times by Dr. Riddle and the writer during the first nine months of 1910. To say that they were repeated fifty times without failure during this period would not be an exaggeration. Other persons were invited to see and saw them.

After October, 1910, we lost this characteristic of the gas and all efforts to repeat the experiment have since failed.

We will not stop to marvel at the fact that magnetism has here possibly shown its power to cause chemical activity or to speculate upon the wonders of such a revelation. If magnetism does it in one case it probably will be found to do it in others, but this is not the field we are now investigating.

The significance of the matter to us (we would not publish an incomplete piece of work such as this for a lesser reason) is that the period in which these experiments were made was the period of the January and the August Experiments, when tubercular healing and cures were present as they have never been since; where weight changes were clear and decisive.

It may be that the solution of our problem will come when we are able to reliably make and use a form of so-called ozone that is decomposed by the proximity of an iron magnet.

While we speak of the magnet as causing this phenomenon, yet in view of what we know regarding the effect of iron upon so-called ozone, it is worth bearing in mind that the wire in the electro-magnet is copper and that it is within the range of possibility that the reactions were caused by the proximity of iron to the gas.

NOTE.—Since writing the above Doctor Charles P. Steinmetz has offered as a possible explanation of the phenomenon the possibility of the "ozone" having been destroyed by the presence in the bottles of very finely divided iron, coming from the iron revolvers of the blowers, incapable, on account of the small quantity and extreme minuteness of the particles, of destroying the gas until gathered into one place by the attractive power of the horseshoe magnet. The electro-magnetic field would not draw the particles of iron to one place as it encompassed the whole bottle. We have decided to publish both the phenomenon and Doctor Steinmetz's very interesting explanation.

THE EXPERIMENTS WITH THE GLASS TUBES

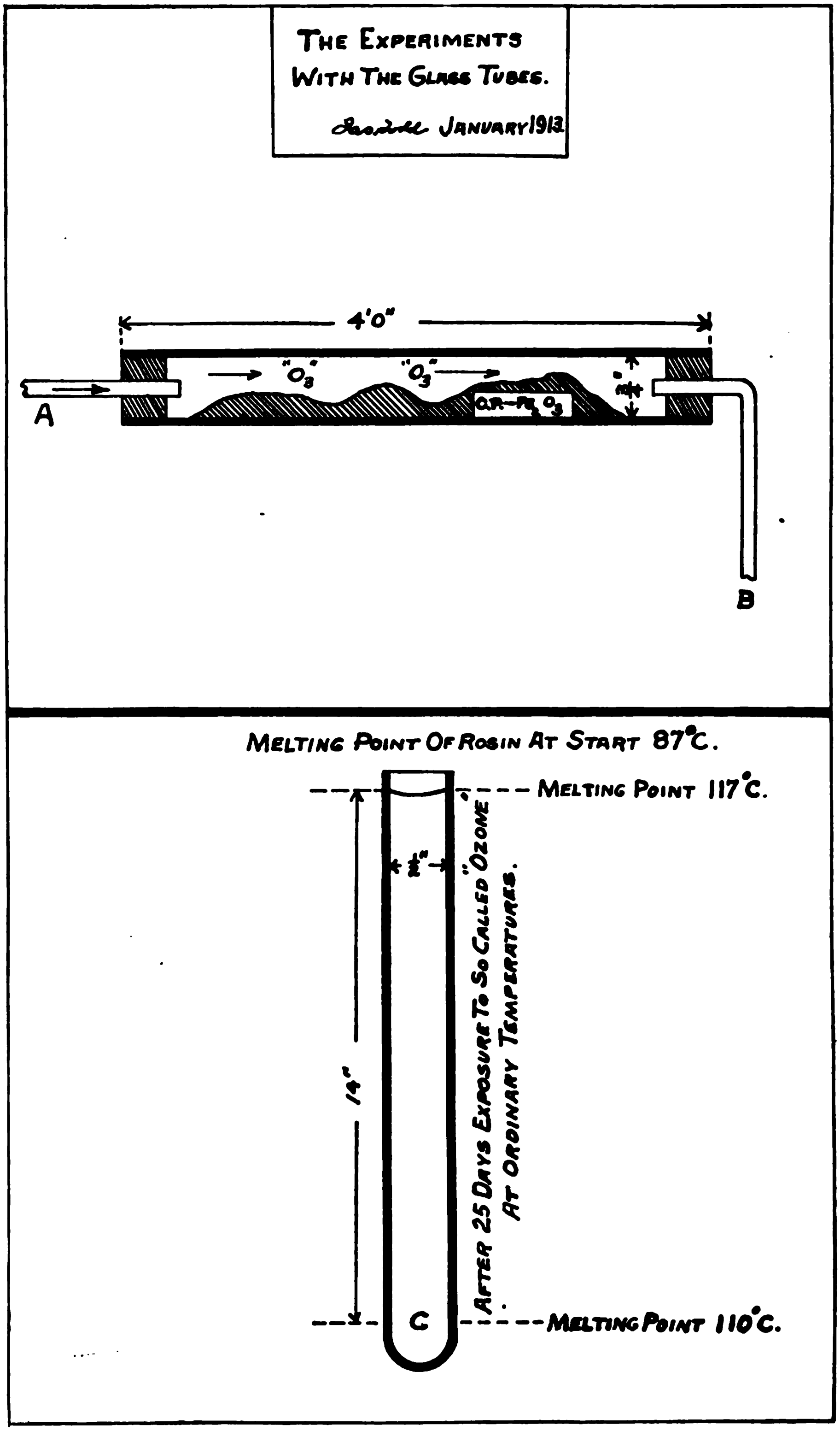
Under this title we place a drawing on page 302.

Our object in publishing these experiments is to place such data here as will plainly show that so-called ozone is not the simple problem it has been considered to be; to show characteristics that will prove it to be very far reaching in its character and consequent ramifications. Upon the upper section of the drawing we show a glass tube four feet long by three fourths of an inch internal diameter. Scattered upon the floor of this tube is a small quantity of chemically pure sesquioxide of iron—the highest ordinary oxide of this metal.

The so-called ozonized air enters the tube at *A* and passes over the iron oxide to the exit *B*. At *B* a bottle filled with iodide of potash and starch solution is so placed as to allow the gas to bubble through it. The gas passing slowly through this tube fails to turn the solution blue, thus showing that the so-called ozone has been destroyed.

It may be objected that the iron oxide is not pure, or not all of the higher oxide, or has been oxidized to a still higher oxide by the acknowledged high oxidizing power of ozone. All these criticisms are very reasonable at this stage and to meet them *we allowed the gas to pass through this tube, day and night, for fifteen months and at the end of that time the gas was destroyed exactly as it had been at the start.* The continuous action here shown cannot be due to a simple oxidation else all the ferric oxide would have long since been oxidized and so the reaction brought to an end.

On the lower section of the drawing we place another glass tube open at but one end, the other being sealed. This tube has been filled with ordinary rosin, carefully melted and annealed so as to


THE EXPERIMENTS
WITH THE GLASS TUBES.
JANUARY 1913.
4'0"
"O3"
"O3"
O.R.—Fe2O3
½"
A
B
MELTING POINT OF ROSIN AT START 87°C.
MELTING POINT 117°C.
½"
14"
AFTER 25 DAYS EXPOSURE TO SO CALLED "OZONE"
AT ORDINARY TEMPERATURES.
C
MELTING POINT 110°C.

give a stick of rosin without any cracks or flaws fifteen inches long and one half inch in diameter, surrounded by glass walls except at one end which is open to allow the gas to come in contact with it. So-called ozone has the power of raising the melting point of rosin by simple contact with it. At the start the rosin used had a drip melting point of 87° Centigrade.

The tube was placed, at ordinary temperatures, in a room constantly filled with the gas for a period of twenty-five days. At the end of this time the melting point had been raised at its surface, at the open end of the tube, to 117° C. The lower end of the glass tube was then cut off one inch from the bottom, a sample of the rosin taken and found to have a melting point of 110° C.

The gas had penetrated to the very bottom of the tube and performed its work almost as well as at the top.

"O_3—an allotropic form of oxygen." This is certainly no ordinary modified form of oxygen. It is a problem and it must be carved out of the flint of human ignorance of the things with which we are surrounded.

WHAT IS SO-CALLED OZONE?

Here is the very pith of our problems. Here is where we must first center if we are to reap complete success, and here we are the least prepared for our work.

Undoubtedly the animal work should, if necessary, be set aside and all energy bent unceasingly upon this strange mystery until by means of its solution we are enabled to think intelligently about it, so that our deductions may be reasonable and consequently our results foreshadowed.

Dr. Riddle advances the idea that ozone may be simply an excitation of the elements caused by passing the atmosphere through the "silent" electric discharge: a greater activity being imparted to them, but not necessarily resulting in any definite combination between them.

Ozone may be the division of what we consider an element, it may also be a definite combination of oxygen and nitrogen into the form of an oxide of nitrogen as yet unknown to us, as for instance N_2O_{10}, its oxidizing power depending upon the overload of oxygen it carries.

In dealing with this problem we are unable to find records of the work of others that show clear proof of the absolute accuracy necessary and so we believe that it is imperative for us to start at the very beginning and to prove which element or elements enter into the problem. We think the best way to attain this is to make oxygen by the electrolysis of distilled water, collecting the gas by using a one per cent. solution of iodide of potash and starch as a menstruum instead of water and acting upon the collected gas with a high tension spark, utilizing the necessarily remaining small portion of the iodide solution as an indicator for the gas.

In addition to the above course with oxygen we would suggest the preparation of large quantities of the atmosphere from which the oxygen has been completely removed, by means of pyrogallic acid and soda solution, for like tests, as also the preparation of perfectly pure nitrogen.

Having by such means absolutely proved which element or elements are necessary to the formation of the gas, a right start can be made and the direction of the investigation followed with much greater confidence than at present.

To undertake to deal with this problem arbitrarily or by means of assumed statements in regard to it would lead to no good, hence such a course has not been pursued. Neither will we attempt to prove even what little we may, but rather rely upon the one thing that holds out hope of reasonable deductions—the fact that the skilled experimenter frequently acquires reliable information simply from the skill and insight that comes from long and constant scrutiny of his subject. Ours has been for a period of more than six years.

Without attempting to speak authoritatively, without attempting to make the matter concrete by placing suppositious formulas before the reader, we merely state what in our judgment is the trend of the matter.

In our judgment so-called ozone consists of not one form of matter but of many, how many we will not attempt to say. Of these different gases we believe that their most definite characteristic is difference in oxidizing power. Some forms are so weak in oxidizing power as to be useless for our purpose. Others are sufficiently active to create a strong resistance to tuberculosis. A third form seems to be so intensely active as to oxidize the living animal so strongly as to enable it to throw off disease easily.

The clear evidence of this latter form and its successful results are shown in the January and the August Experiments, while the gas used in the First May Experiment seems to have belonged to the second class, and yet, on the very verge of what it should be as evidenced by the extreme resistance to the disease and the fact that tubercular healing was present in some of the animals.

So-called ozone of the class that we require may be such an intense oxidizing agent as to cause it to oxidize the nitrogen accompanying it through the pipes, possibly not necessarily in the generating cells, but after passing them.

We have, for instance, pretty clearly established the fact that some forms of so-called ozone transport through pipes without loss of strength while others los[illegible] as much as twenty-five per cent. of their strength in passing from the engine room to the animals. We are inclined to think that especial significance attaches to those forms that decompose most readily as in our judgment they will be the most active.

In the chapter on the effects of magnetism, we have dealt with another characteristic tending to the same conclusions, for probably the gas that was destroyed by the magnet was not the same as the one which was not.

The continual discussion which this whole ozone question has raised is quite possibly due to this same condition as some claim to have obtained wonderful results while others cannot sustain their work. If we assume that the problem is as we have stated, this state of affairs is fully accounted for, for unknowingly one person gets a suitable gas while another makes something entirely different.

If the case is as we think, the proper steps can be taken to prove it and make the future practical because it should not be very difficult, with the whole field of chemistry from which to draw, to obtain reagents that would be differently oxidized by the various forms of the gas and so enable us to place ourselves on a stable foundation.

The writer is inclined to think that it may possibly be necessary to draw air for our purpose from a large natural source of absolutely uniform supply, as for instance from the Mammoth Caverns of Kentucky where the air is of a fixed temperature, humidity, etc., and where even the effect of light has been removed for long periods.

In such a way an absolutely fixed condition of the atmosphere would be obtained which, even if not normal, would establish a reliable working basis.

A coal mine should not be used for such a purpose, as the organic matter present might affect the result. Probably an ordinary preparation of the air as regards temperatures and humidities will be sufficient, but the above should be kept in mind.

THE GAS DISTRIBUTOR

This apparatus is exceedingly simple both in design and operation; its object being to measure, mix and deliver the air and "ozone" at the strength and volume determined by the operator.

On page 309 we place a detailed drawing of the instrument.

The rear portion of the case (2) is a measuring device in the form of a cast-iron cylinder six inches long and exactly one and seven eighths inches inside diameter, opening into a larger cylinder (4) three and one half inches in diameter, this latter portion of the apparatus acting as a mixing chamber for the gases.

The smaller or inlet end of this casting is threaded for two and one half inch pipe and is screwed into a two and one half inch valve, the outlet end is threaded to fit a four-inch pipe which, however, is not attached in ordinary use.

Fitted through the side of the mixing chamber is a three quarter inch brass pipe (5) carrying the "ozone"; attached to this pipe by means of an elbow is a piece of brass pipe (6) in which ten holes are drilled and reamed to exactly three sixteenths of an inch in diameter. A brass ferrule (7) is threaded as a sleeve over the perforated pipe; as this ferrule is moved it either opens or closes the holes and as three sixteenths of an inch is in area equal to one one-hundredth of the area of a circle of one and seven eighths inches, under uniform conditions, just one per cent. of "ozone" will mix with the air for each hole opened, but the conditions are not uniform as the shape and the length of the openings differ and it has been necessary to find the proper pressures on each gas. This has been accomplished by means of gas meters and we have established as a working rule

Fig. I.

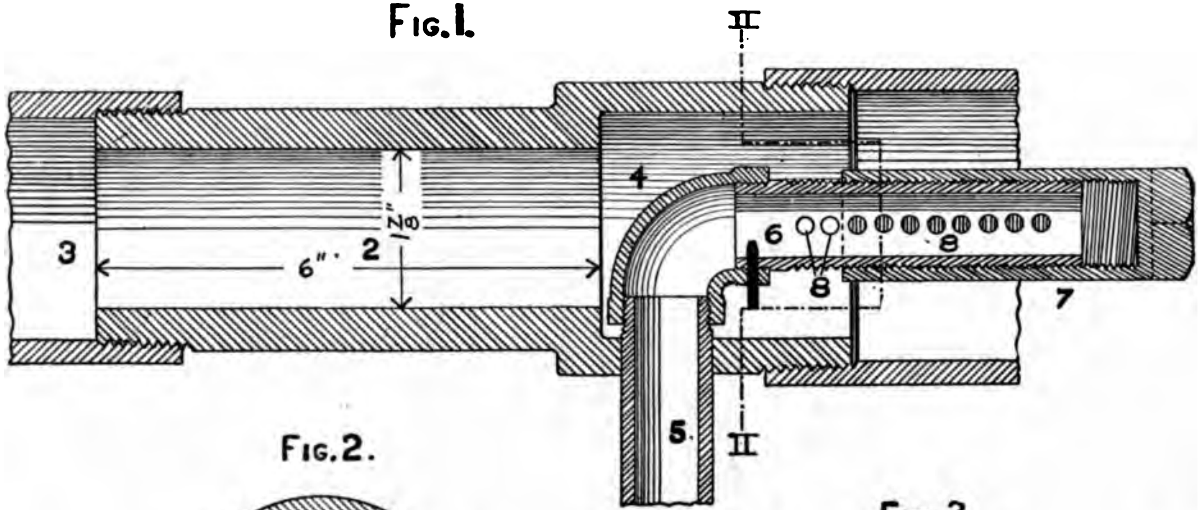


Fig. 2.

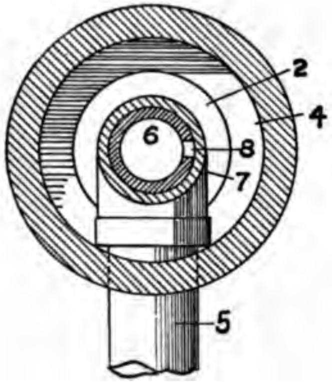
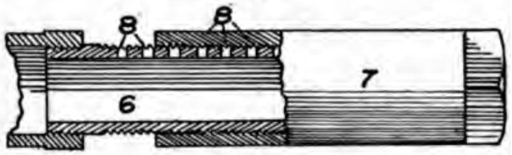


Fig. 3.



Gas Distributor.

Designed By Jas. Todd Feb. 16, 1910.

four inches of water pressure for the air and three inches for the "ozone," these figures not being exact but close enough to be practical.

By placing a piece of pipe and a four-inch valve on the outer end of the distributor casting and tapping a small pipe into the side of the pipe, the distributor can be used for the surface treatment of wounds, or any form of local application. Slightly closing the four-inch valve will cause sufficient pressure to force a portion of the mixed air and gas out through the small side pipe.

For this latter purpose the whole apparatus should be coated with tin and the four-inch valve should only be closed enough to cause a satisfactory flow through the side pipe, as it is apparent that if it is closed to a considerable extent it will retard the proper mixing of the gases.

The distributor must be constructed exactly as shown in the drawing and must be kept clean and free from dust.

THE TESTING OF SO-CALLED OZONE

We are seriously hampered by the lack of a good quantitative method for testing this gas, but we have succeeded in evolving a method which gives satisfactory comparative results. The essential of the method is identical operations upon an assumed standard of strength.

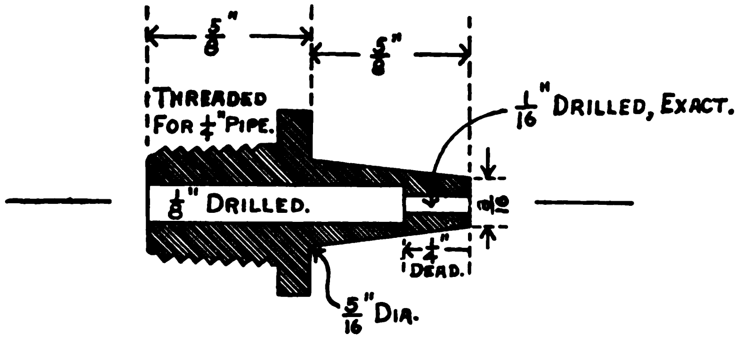
We have learned to consider a certain strength of the gas as normal, and in order to inform the reader in regard to that standard we give, in rotation, the essentials, using as an indicator the blue color formed in a solution of iodide of potash and starch by the action of the gas bubbling through the solution for fifteen seconds.

The intensity of the color to be obtained can be determined by dissolving 0.1 gram of iodine in 50 c.c. grain alcohol and then diluting with water to exactly 1000 c.c. To 25 c.c. of a one per cent. solution of potassium iodide in water, to which 3 c.c. of starch solution have been added, add 5 c.c. of the iodine solution; the color obtained will be the same that we use as normal in our testing.

On page 312 we place a drawing of the testing nipple. The essential dimensions of this design must not be changed, for if the form or dimensions are changed the quantity of gas passing through it at a given pressure will be changed. It should be made of brass and cleaned before use by passing a one sixteenth drill through the opening, being careful, however, not to enlarge the opening.

Through this nipple at the same pressure, the same quantity of gas will pass at all times. Its use is to measure the gas tested.

The testing solution is a one per cent. solution of potassium iodide in distilled water and may be made in quantity and kept indefinitely.



Gas Testing Nipple.

Designed by Jas. Todd. Apr. 8, 1910.

The starch solution, which must not be kept for use longer than two days, is made as follows:

Four grams of starch are rubbed to a smooth paste in a mortar with 10 c.c. of water. 100 c.c. of distilled water is heated to the boiling point and the paste slowly poured into it and the whole allowed to boil for one minute after the starch paste is added.

We use for testing purposes salt mouth bottles holding 50 c.c. and pass the gas into them by means of a short rubber tube connecting the gas testing nipple with a piece of glass tubing of about ⅛-inch or $\frac{3}{16}$-inch bore, the glass tubing passing to about one inch below the surface of the testing liquid.

To make the test, place 30 c.c. of the potassium iodide solution in a bottle, add 3 c.c. of starch solution, adjust the pressure on the gas pipes to exactly three inches of water pressure at the place the gas is being taken from, accomplishing this either by opening or closing the release valve on the gas line.

After seeing that the testing nipple is clean, attach the rubber tube to it and let the gas pass through the testing solution for exactly fifteen seconds, then adjust the operations of the machinery until the same color is obtained in fifteen seconds with three inches pressure of gas as is given by the test with the pure iodine solution and the machinery will operate normally to ours.

After having established this state of affairs it is easy to compensate for varying strengths of gas by raising or lowering the pressures in the gas line. For instance, if the gas is weak, by increasing the pressure until the normal color is obtained in fifteen seconds the same quantity of so-called ozone will be delivered to the experimental rooms.

The precautions, so far as the actual testing is concerned, consist of absolute adherence to the method in all of its details and closely watching the rubber tube as the gas will soon break through it. If such is the case, the test is of no value.

The gas must come from the engine room, carried in brass pipes, in large volumes (fully ten times the quantity actually required) and as quickly as possible and must pass the distributors which are in operation before being tested, for the reason that all tests must be taken after passing the point at which the gas is being used, this being necessary as the gas may lose as much as twenty per cent. of its strength in travelling one hundred feet.

THE SECONDARY CHARACTERISTICS OF SO-CALLED OZONE

At one time we made a pretty thorough investigation of the germ life both in and around the rooms used for applying the treatment to the animals.

This investigation disclosed the fact that there were practically no germs of any kind in the rooms where the gas was used and further disclosed a very decided deficiency of germ life not only in the whole building, but also in the neighborhood of the building.

Such results seem to make it apparent that if hospitals were placed under say not over one per cent. of ozonized air uniformly mixed with air by means of a distributor, that it would almost end the trouble, now so prevalent, caused by contagion and secondary infections.

It would also appear reasonable to expect success from the treatment of unhealthy wounds with ozone mixed with air. As we have stated in another place, the use of ozone without first diluting it with a *large* and *constant* quantity of pure air is in our judgment *exceedingly dangerous.*

It is also apparent that its use should be constant, and protracted; treatments for short intervals can accomplish little benefit as accomplished oxidation requires long intervals of constant exposure to the oxidizing action of the gases.

THE POWER PLANT

The description here given of our power plant is for the purpose of enabling others to reproduce our operations if necessary.

The operations here shown are based upon the principle of drawing the air through the generators.

As the mechanical operations are as yet not fully suited to the problem, no drawings are used.

We have three ordinary "Root" rotary blowers with six-inch inlet and discharge, their capacity being regulated by the speed at which they are driven; one to drive the air to the animal rooms and two for the gas.

All gas machinery is in duplicate throughout in order to prevent the necessity of closing down in case of an accident; in case of an accident to the air blower we could quickly connect the air lines to the extra gas blower and utilize it for delivering air until the other was repaired.

We have two small dynamos specially wound for "ozone" generation, two transformers and two "ozone" generators, the whole plant being driven by a steam engine through an overhead shaft.

As to the manufacture of the gas, the atmospheric air is drawn into the system through a stack sixty feet high, protected from rain by a cone top.

On its path to the blower the air passes through the "ozone" generator where it is acted upon by the high tension electric current and a portion of it converted into so-called ozone. It is then slightly compressed and driven forwards in two-inch brass pipes to the rooms under an initial pressure of ten to twelve inches of water; the object being to send as much gas as possible, and as quickly as possible, through the pipes from which the rooms draw their supply.

After the main pipe line has passed through all the points of distribution the gas reaches a water gauge and a brass gate valve. By partially opening or closing this valve, the pressure of the gas is raised or lowered at will in order to compensate for changes in its strength.

In the piping system just after leaving the "ozone" blower a four-inch brass line, equipped with a gate valve, is attached and carried to a stack or other convenient outlet and by opening or closing on this gate valve we regulate the quantity of gas which is sent forward to the experimental rooms. As the gas frequently loses as much as twenty per cent. of its strength in passing through one hundred feet of pipe, it becomes very necessary to move it quickly.

Any variation in the speed of the engine, as it is multiplied sixty-six times by the transformer, causes a variation in the quality of the gas and in order to aid the engine governor, we have placed a steam regulating valve on the main steam line at the engine. This valve is set at fifty pounds, and as our steam never falls below this pressure, we are enabled to maintain an almost constant speed.

Several years ago we discovered a very peculiar thing in regard to the manufacture of this gas. We had been much troubled by the fact that we could not make a strong gas in the summer; in the winter it was satisfactory but in the summer it was irregular and weak and the trouble became so serious during the summer of 1910 that it became necessary to stop everything else and concentrate on this problem.

After many disappointments and failures we in the end discovered that the manufacture of the gas depended upon a ratio being established, the essential features of which were the initial temperature of the atmosphere from which the air was originally drawn and the quantity which passed through the "ozone" generator.

To cool or warm the air in the pipes before it reached the "ozone" generator did not seem to accomplish the purpose, the question always working back to the temperature of the original outside air and in the end we clearly established the fact that when the weather was very warm we required less air passing through the generators than when it was cool; in other words, we uncovered the very strange fact that the quantity of air passing through the generators should be inversely as the temperature of the original air used; which in its practical application simply meant the hotter the day the less the quantity of air passing to the generators.

The fact once known can be met in a number of ways, as by changing the speed of the blowers.

The questions involved in the machinery to be used for this work are of great importance and we shall very probably have to a large extent, to design our own machinery in order to get the necessary stability and reliability.

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